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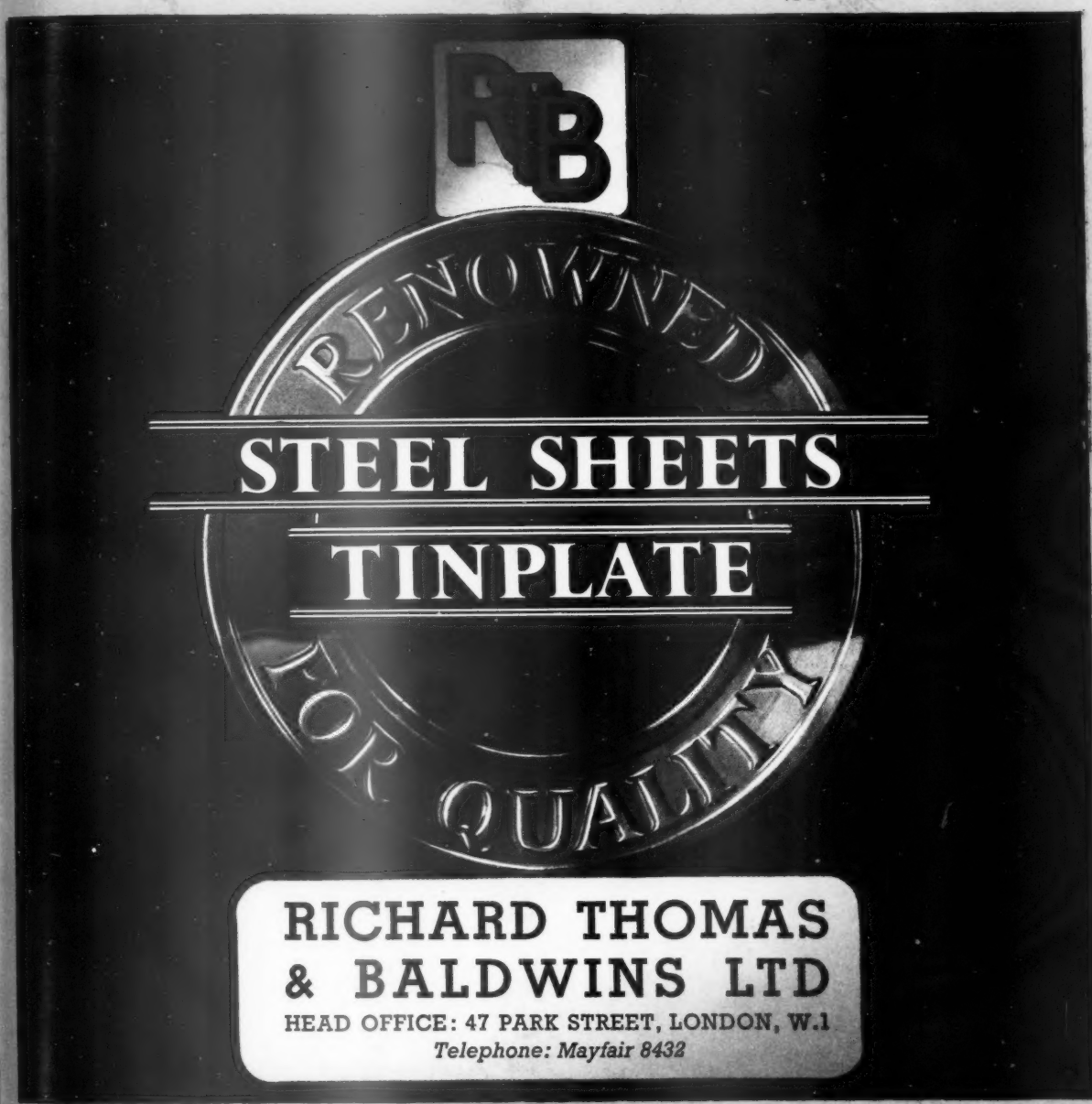

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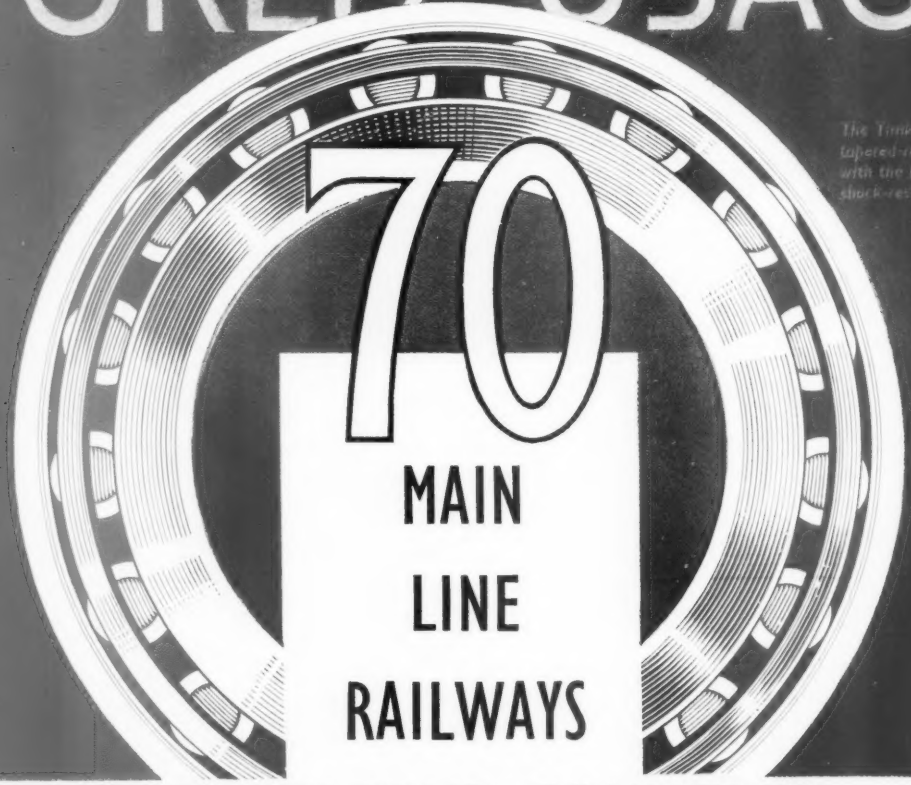

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Meeting Peak Demands

THE fact that heavy holiday traffic in the peak season always brings out a crop of grumbles about passenger services does not by any means necessarily reflect badly on British Railways. This summer, however, complaints have been ventilated even in the House of Lords. For instance, Lord Forbes recently protested that by June 7 all second class sleeping berths on an Aberdeen-Kings Cross train were fully booked for September 23. Would-be travellers who accept without complaint the news that an aircraft or motorcoach is fully booked tend to expect railway services to be available for them, complete with any special facilities appropriate to the journey, at any time they may be required. No airline or public service vehicle operator would be expected to provide vehicles which could be used to capacity at a few peak weekends and would then stand idle for the rest of the year; but the railways are expected to do this, despite the great amount of capital which would thereby be tied up unproductively. There are sharp criticisms of seat shortages by people who, having been turned away from other forms of transport, expect to have seats provided for them on trains at peak hours or peak weekends. If they would travel on a date a little earlier or later they would usually find that comfort and good service were available. Most regular travellers realise the impossibility of carrying everyone in comfort at peak hours, but it is unfortunate that these casual travellers have to make their journeys at periods when it is very difficult to supply a satisfactory service, as facilities are strained to the utmost. They rarely appreciate that the railways at least get them to their destinations, whereas other forms of transport turn them away. Lord Forbes is not to be classed with this type of traveller, and Lord Mancroft, speaking for the Government, admitted that the present sleeping-car position is not what it should be; but the economic facts behind the matter are exactly the same. Whereas some special vehicles, such as refreshment cars, can be used for ordinary passenger accommodation when not required for use in their special capacity, a sleeping car—a very expensive vehicle—cannot be so used. Even although an extra car may be available, it is scarcely economic to run it in a train to accommodate an overflow of two or three passengers, for its weight, and therefore the cost of hauling it, is out of all proportion to the charge to passengers. To meet the steady rise in demand for sleeping cars on regular services, British Railways are building 105 first class, 27 composite, and 79 second class sleepers in the 1957-58 programme. Some alleviation may be afforded by acceleration or introduction of high-speed Anglo-Scottish expresses such as the new "Caledonian" (Euston-Glasgow) which obviate night travel.

Steel Prices

THE rise in the price of steel last week by an average of 7½ per cent is a matter of some moment to the British Transport Commission, which will use large quantities of steel products in the course of the modernisation programme for British Railways, and already uses a great deal of steel for routine purposes. The extra cost of steel used directly is only one aspect of the matter, for the price of every item of equipment containing steel is almost bound to rise automatically and the cost of railway modernisation will increase accordingly. No estimate of the extra cost is possible because the price increases of items will vary according to their steel content, but with higher wages and other rising costs the new steel prices are taking general cost levels ever higher. The steel industry explains that it is paying more for coal, coke, scrap, and inland transport—including railway charges—so that the current inflation must be held largely to blame. The total extra cost to home consumers will be £57 million a year, with a further £10 million to overseas consumers. At the same time as his announcement of increased prices, Sir Archibald Forbes, Chairman of the Iron & Steel Board, disclosed plans for the steel industry which should result in an output of 29,000,000 tons of crude steel by 1962. This suggests that some current shortages of steel for railway purposes should soon be ended.

Claims and Compensation in India

IT is probable that India suffers more than most other countries in respect of the extent of loss and damage of freight sent by rail. Since the war there has been serious deterioration in this matter. In 1938-39 only 57,000 claims were made on all Indian railways and a mere £32,100 was paid in compensation, whereas in 1955-56 the number of claims had risen to 450,000 and amount of compensation paid to £1,920,000—a considerable reduction, nevertheless, on the 1949-50 figure. The reasons given are (1) the great increase in traffic which has had to be met by storage in the open instead of under cover, (2) scarcity conditions and high prices resulting in blackmarketing, theft, and pilfering on a greatly increased scale, (3) unavoidable recruitment of untrained staff to meet the rush of traffic, and (4) leaky and even insecure wagons due to overdue repairs. The position could obviously be improved by rigid insistence on completely effective packing

and closer supervision of handling, coupled with selection in yards of only wagons with no defects, and checks on condition of consignments and their housing at intervals throughout transit; this would seriously affect the turn-round and availability of wagons.

Preventive Measures

A BALANCE has therefore been struck between revenue losses: (*a*) paid in compensation, and (*b*) reduction in goods movement capacity by curtailment of wagon availability. The Indian railways favour loss (*a*) provided that claims and compensation can be kept within what they consider reasonable limits. With this end in view each of the seven Indian railways has a claims prevention organisation for analysing the most usual causes leading to claims, the commodities upon which claims are generally made, and the areas where incidence is high. Study of analyses enables preventive measures to be formulated and enforced. The most fruitful cause of claims are loss, damage caused by rain or other wetting, and breakage. Most losses result from pilfering and theft, failure to detect shortages when goods are accepted, and less frequently from despatch to wrong destinations or incorrect delivery. Besides stricter security arrangements on running trains, in yards and sheds, and on platforms, greater attention is being paid to labelling, marking and sealing of packages, labelling, sealing and riveting wagons, and their locking. Tarpaulins are being used to a greater extent. A vigorous campaign has also been initiated to prevent rough and careless handling of goods and loading and shunting of wagons.

The Ganges Bridge at Mokameh

GOOD progress is being made with one of the biggest Indian railway projects, the single-line broad-gauge railway and road bridge replacing the present metre-gauge wagon ferry over the Ganges at Mokameh. By the end of May, all the main and shore piers had been completed up to grillage level according to schedule, but unfortunately delay in the supply of imported steelwork is holding up work on the superstructure. Consequently, girder erection is not expected to begin before October. By the middle of July a total quantity of 140,000,000 cu. ft. of earthwork had been done by earth-moving plant, and during the past working season 65,000,000 cu. ft. were moved to form the bridge approaches and marshalling and transhipment yards, now well advanced. The estimated cost of these yards including the locomotive depot is approximately £2,000,000. The roadway will be carried on the upper deck of the main spans, and on the north (low) bank of the river its viaduct approaches will be supported on R.C. trestles resting on R.C. pile foundations; on the south (high) bank the trestles will have shallow foundations.

Improved Services in Hampshire

THE provision of more frequent services, with a considerable reduction in journey times compared with the present steam schedules, is planned when two-car diesel-electric train sets are introduced on certain routes in the Hampshire area on September 16, by the Southern Region. The places principally affected will be Portsmouth, Southampton, Salisbury, and Winchester. The two-car sets are generally similar to the six-car sets built for the London-Hastings main line via Tunbridge Wells, described in our May 10 issue. One 500-h.p. diesel engine and generator powers each set; the coaches are built on British Railways standard methods of construction for all-steel stock. To improve facilities for passengers on other lines in the area, to which it is planned to extend diesel working towards the end of the year, steam trains will be operated, after September 16, on schedules as similar as possible to those envisaged for the new diesel sets. This, it is stated, will put a great strain on existing motive power and, for the interim period, train operating will be regarded as under emergency conditions.

C.T.C. Difficulties and Improvements in India

IN India, C.T.C. is now under exhaustive trial over wide areas. More than 30,000 circuit miles of overhead line wires have been installed and are being maintained by the Indian Posts & Telegraph Department. These wires are usually 300 lb. per mile, or 200 lb. per mile copper conductor. Apart from them, the maintenance of the circuit is the responsibility of the Railway Tele-Communication Wing. This inter-dependence of railways on another Government department, though it has always worked well with ordinary telegraph equipment and communications, is not very satisfactory with C.T.C. But so long as the railways rent wires from the P. & T. Department, close co-ordination at all levels must be maintained between the two departments; joint tests of the lines by them and tact on both sides usually secure the desired effect. Unfortunately, failures in the overhead line wires are not infrequent, due mainly to interference from neighbouring power or telephone circuits, theft of copper wire, or birds nesting among the wires. Different types of control telephones at present complicate maintenance, but a move is being made towards standardisation.

Selective Calling and Circuit Layout

FOR signalling between control and wayside stations, a system of selective ringing equipment is in use in India, but it makes for serious overcrowding on the control board. Electro-mechanical apparatus that would overcome this difficulty is not yet manufactured in the country. However, a master station control equipment—using telephone relays and uni-selectors already in use on the railways—has been developed in India and is under trial on certain railways. This will not complicate maintenance, as the railways are now installing automatic telephone exchanges. The Southern Railway is also developing a simple type of master station control, but it is probable that electronic selective calling using audia tone such as is used on v.h.f. radio and linked land-line circuits will eventually prove the solution of this problem. A more important one, however, is the design of a control circuit layout that is suitable for operation and yet within the limits of technical requirements, notably audible speech over long distances, usually about 250 miles and covering 40 wayside stations with normal equipment.

French Signal Lighting Policy

AN article in our French contemporary *La Vie du Rail* gives particulars of the policy adopted by the French National Railways—and initiated indeed by the earlier private companies—regarding the lighting of mechanical type signals, of which, despite the wide extension of colour-light signalling, that system still has large numbers in service. It is pointed out that local circumstances must play a great part in arriving at what is the most economical course to adopt. Thus some countries, such as Great Britain, have found long-burning oil lights the best, all things considered; but in Germany, where there is a ready supply of propane gas, that has been used with satisfactory results. In Sweden acetylene has been widely applied. After much research and careful recording of first costs and maintenance charges the S.N.C.F. has found electric lighting, either from primary batteries or local power supplies, to be the most economical for the great majority of signals and there are now some 36,000 so equipped, of which 9,000 are fed from batteries. There are also 1,500 signals lighted by acetylene and 5,500 by long-burning oil lamps. The progress made of recent years in the manufacture of primary cells has had much to do with shaping policy finally in this important matter.

Diesel Operating Economies

THE decision of London Transport to obtain a further two steam tank locomotives, rather than diesel units, for train haulage duties after normal traffic hours over its electrified lines again underlines the necessity of operating

diesel locomotives for as long as possible each day if they are to prove economical in working. These tank locomotives, former Western Region "5700" class pannier tank units, of 0-6-0 wheel arrangement, a well-proved shunting design, referred to elsewhere in this issue, were preferred to their diesel counterparts because the "use of diesels would not be an economic proposition" taking into consideration the limited time they will be required to work, with reference to the relative first costs of a new diesel or an elderly steam unit. This statement serves as a further warning to railway authorities that diesel motive power must not be regarded merely as a replacement for steam, but that to obtain the maximum economies of operation, the most up-to-date techniques of running, planning, and maintenance must be applied.

Weight Saving in Coach Construction

THE characteristics of aluminium alloys in the construction of rolling stock, and notably their high strength to weight ratio and resistance to corrosion compared with mild steel, have been known for some time; but it has not often been possible to obtain a true relative picture of the savings in operation and maintenance costs of such vehicles compared with the higher first cost resulting from the more expensive material.

The Toronto Transit Commission, by obtaining for its Yonge Street Subway, from Britain, from the Gloucester Railway Carriage & Wagon Co. Ltd. a number of otherwise identical steel shell and aluminium shell underground coaches (described respectively in our issues of January 8 and December 3, 1954), operating side by side, has made possible practical service comparisons of steel and aluminium in passenger coach construction. The results to date form the basis of a paper read recently to the American Institute of Electrical Engineers by Mr. L. W. Bardsley, Superintendent of Electrical Equipment to the Toronto Transit Commission, the substance of which is reproduced elsewhere in this issue.

The particular value of the paper is that it enables the effect of the lighter form of construction to be evaluated in various directions such as tractive power costs, journal and drive unit bearing life, wheel and brake shoe life, permanent way life and maintenance, and body maintenance costs. It also confirms the theoretical calculations with practical experience and measurement. That all features of operation, as far as possible, have been kept identical for both aluminium and steel vehicles, suggests that the comparisons obtained should be reasonably accurate. Too often the advantages of lightweight construction seem to be worked out by rather rule-of-thumb methods, the accuracy of which may never be proved in practice because of a lack of suitable comparison.

While the paper shows that over an estimated 30-year period overall savings do occur, it should be borne in mind that the savings are comparatively small. With the Toronto cars, the largest of the five factors considered, power consumption, shows a saving of some 8 per cent.

This figure is not surprising bearing in mind the small proportion of total weight which can be represented by the body shell, in this case with the additional complication that a large amount of aluminium was incorporated in the bodies of the particular steel cars used for the experiment. It is apparent, for instance, from the table of weights given in the article in our July 26 issue on other Gloucester-built lightweight stock—diesel railcars of tubular steel construction and integral construction for British Railways. This order of saving will continue to be the case where only a reduction of body weight is being achieved.

The problem of integral body construction with light metals is being faced by British builders with some success. Nevertheless, body design is complicated in the case of British Railways stock by the high station platforms; these by restricting the loading gauge at the base of the body-sides give a profile which offers difficulties in combining strength of body with maximum space available in the car.

Transport and Parliament

TO all intents and purposes the present Parliamentary session ended with adjournment for the summer recess. When Parliament reassembles on October 29, minor business and general debate will occupy the four Parliamentary days that remain before the State Opening on November 5. Transport matters are unlikely to be raised, with the possible exception of the placing of British Transport Commission contracts in connection with the railway modernisation programme which would arise if the report called for by the Minister is then available. Nor at present does it appear that transport policy and legislation will require a place in the Queen's Speech. This is as well, as if the industry can now be given that much-needed rest from political interference or upheaval it can get on with its main task of operating the country's transport system unmolested and free from distraction.

The session now ending has been important to transport and particularly to the Commission. The Transport (Railway Finances) Bill had a speedy unopposed passage in the first days of the session, and while it could not solve the British Railways financial problem it did at least provide the funds to tide the Commission over until modernisation enables it to balance its budget. Furthermore, the new freight charges scheme, with its greater flexibility in regard to charges, is now in operation and Parliament seems content to sit back and to wait and see whether those responsible can successfully exploit the opportunity the scheme provides for free and fair competition between road and rail.

Although there may be a lull as far as Parliament is concerned, it must not be assumed that there is any less interest in the nationalised transport undertaking than heretofore. On the contrary, transport has received its full share of attention during the recent session; it was brought to the fore first by the necessity of tackling the finances of the Commission and then by petrol rationing consequent on the oil shortage arising out of the Suez episode. This indirectly did more, probably, to bring about an intelligent re-assessment of transport needs than any amount of Parliamentary debate and legislation. The failure of the railways to capture and to hold a larger share of traffics, more particularly freight on the one hand, and the strength of the road transport industry on the other, enabled a clearer picture to be obtained of the relationship of the two. Those M.Ps who are inclined to be railway-minded—and because of the number of former railway directors on the Conservative benches and the large railway trade union element in the Labour party, there are many M.Ps who are—formerly maintained that much of the traffic on the roads had been stolen by stealth from the railways. Experience during the oil shortage shook this view, and the extent of road freight transport as a growing form of transport was brought home to them. There is, therefore, a greater willingness to meet the needs of both rather than to favour the one at the expense of the other. This should lead to a more objective and rational approach to transport policy.

As to its relationship to the Commission, Parliament is still uncertain. There is some uneasiness among Members at the large sums Parliament is committing to the Commission to enable it to meet its deficits and bring its system up to date. The same applies to all nationalised industry; but because the railways are operating in the red there is greatest concern there. During the session the Commission's affairs were probably debated more than during previous years: the bill providing the money, the B.T.C. private bill, and the annual report and accounts for 1956 all provided the opportunity, of which Members took full advantage. Even so, the view is sometimes expressed that the size and scope of operations of the Commission and its financial position demand closer control by Parliament than is now exercised. Few suggestions as to how this could be exercised are forthcoming nor would it necessarily be advantageous. There is already a Select Committee on Nationalised Industries which has made no reports this session, but at least that

should be given a fair trial. Any interference in the day-to-day affairs of the Commission is to be avoided. It has suffered from too much, not too little, in the past and now that the way has been cleared for it to operate on modern lines with modern equipment it should be given a chance to prove itself commercially able from both the administrative and financial viewpoints.

It is to be hoped, therefore, that the transport lull will continue throughout the coming session. The only shadow on the horizon is the Labour Party policy statements on present and future nationalisation. Both reiterate the pledge to re-nationalise road haulage. One can only hope that that does not presage a major upheaval in nationalised transport if Labour returns to power. That the Commission should be given reasonable freedom to expand in the field of road transport is sensible, but blanket acquisition as under the 1947 Act would once again cause dislocation and confusion that would ill serve the interest of transport as a whole. Parliament and politicians on both sides would be well advised to leave to those responsible for the provision and operation of the transport system decision as to what changes should be brought about and how. They would then be governed by the needs of transport and its users and not by party doctrines.

Capital for Commonwealth Development

THE provision of capital to Commonwealth territories to enable their economies to be expanded and the best use to be made of their resources is a matter of vital importance to the economy of the United Kingdom, which looks to the Commonwealth as its most important potential market. With the growth of a country comes the need for railway communications of progressively greater complexity, many of the materials for which would, in the normal course, be supplied from Britain. The White Paper issued on July 30, "The United Kingdom's Rôle in Commonwealth Development" (Cmd. 237), shows that some £200 million is invested annually in the Commonwealth by this country; but it is disturbing in that it reveals some of the difficulties of encouraging further savings in the United Kingdom to form the basis of overseas loans. The £200 million is made up of £170 million to the sterling area, including some £125 million of private investment and loans from the funds of the Exchequer and some £30 million in grants to sterling territories; the remaining £30 million is made up of investment in Canada. In all, United Kingdom investment in the Commonwealth averages 1¼ per cent of the gross national product, or 7—8 per cent of gross fixed investment at home.

In the last 10 years, 70 per cent of the external capital invested in the sterling area of the Commonwealth is estimated to have come from the United Kingdom, 15 per cent from the U.S.A., 10 per cent from the International Bank—contributions to which are made by this country—and 5 per cent from other sources. It is clear that the United Kingdom is still providing by far the greater part of the money needed for Commonwealth development. The White Paper states explicitly the Government view that once countries become independent, loans on a government-to-government basis should cease, save in exceptional circumstances, and the newly independent country should obtain loans from private sources only. The Government sees no advantage in creating new intermediate agencies, such as a Commonwealth Bank, through which investment capital could be channelled to Commonwealth needs, and it is true that the mere creation of an agency would do nothing to bring forward increased investment capital.

The fact remains that for important developments such as that of the railways in East Africa and India, it has not been found possible to raise all or some of the capital in this country. It is probable that where, in the case of a Commonwealth country—and more especially one that has recently achieved its independence—a loan is obtained from outside the Commonwealth, for railway development or similar purposes, the loan may be accompanied by provision for obtaining the necessary capital equipment under attractive terms from the country whence the loan is granted—with unfortunate results for the British industries able and willing to supply the goods in question. The only way to increase the funds available is to build up the volume of savings in the United Kingdom—and, of course, in the countries of the Commonwealth. Before savings can be expected to rise it is necessary to persuade people that the incentive is sufficient. As far as the Commonwealth is concerned this may well be done by the Commonwealth Economic Committee, a little-known body which has existed since 1925. At the recent Commonwealth Prime Ministers' Conference it was decided that the scope and functions of the C.E.C. should be expanded with "the particular purpose of drawing attention to the economic resources of Commonwealth countries." If this can be done in such a way as to fire the imagination of potential investors it will go far to create the right atmosphere for investment. But it is questionable whether the urgency of the question is appreciated in this country.

There is a world-wide shortage of investment capital, and the cost of investment in any given scheme is that of not investing in another. The Commonwealth Development Finance Company, which the Government regards as a suitable channel for private investment, is hampered by shortage of capital and the high interest rates on long-term securities, which reduce the margin between the income from loans and the cost of borrowing to so small an amount that the building-up of reserves is impossible.

Investment in new railways rarely offers the incentive of quick returns. They are forerunners of development and trade and must await the expansion of the territory they serve before they can hope to give returns on the capital invested. Unless they can be shown to have a potential traffic that is quickly realisable, as has been the case with some Middle East railways in oil-bearing territories and Canadian lines to tap mineral and forest resources, they must be backed by the governments of the territories concerned, and those governments must be prepared to offer a reasonably high rate of interest. Where capital is required to improve existing railways which are being swamped by traffic which they are not equipped to handle the picture is very different. Such investments can be expected to pay an almost immediate return, and should be as attractive an investment as could be wished. There are at present several such cases of potentially good results to be obtained from judicious investment in equipment to increase the capacity of railways being overwhelmed by traffic as the territories which they serve develop. This should strengthen the appeal of loans required by independent Commonwealth governments, and the raising of the borrowing limit of the Colonial Development Corporation from £100 million to £150 million should assist the provision of capital to countries still under tutelage. Above all, investors in this country must take a long-term view and remember that investment now will lead to new markets in the years to come.

Great Northern Railway Board

THE annual report of the Great Northern Railway Board for the year ended September 30, 1956, is signed by Messrs. G. B. Howden and A. P. Reynolds, Senior Members of the Board. It records that despite continued pressure by the Board, the comprehensive proposals submitted to the Governments of Northern Ireland and the Republic of Ireland in November, 1954, for the replacement of steam locomotives by diesel motive power units, the provision of new rolling stock, and other modernisation of railway equipment, had brought no decision except approval for the provision of 24 additional railcars for passenger train working. In consequence, abnormally high costs are being incurred in maintaining in working order locomotives, carriages, and wagons which should long ago have been scrapped and replaced by modern equipment. For example, 60 steam locomotives—one-third of the total stock—will need heavy repairs during

the current year. In the present uncertain state of the undertaking it has not been considered justifiable to proceed with plans for the re-organisation of Dundalk Works and nothing has been done to replace the premises which were destroyed by the fire at Dundalk in September, 1955.

Brief reference is made to the proposed closure of lines on and adjoining the Border; developments during the current year, including the decision to close certain sections of these lines in Northern Ireland, and the proposal to suspend traffic on what will in effect be truncated lengths (known as "stump lines") have been recorded from time to time in this journal. The report states that passenger services on the Dungannon-Cookstown branch were terminated in January, 1956, while, in April all traffic on the Knockmore Junction-Banbridge Branch line ceased.

The new bridge over the River Tolka in Dublin, on the main line, replacing that destroyed by the storm in December, 1954, was brought into service in February, 1956. Work in connection with the new railcar shed at Fairview, Dublin, was pushed ahead. During the year seven locomotives were scrapped and a further 24 withdrawn from service as needing extensive repairs which were not worthwhile carrying out. No new carriages were built, and 22 were taken out of service as beyond repair.

"The greater proportion of the passenger stock used by the board," the report states, "reflects little credit to any transport undertaking, but it continues to be used simply for the reason that, so far, it has not been possible to provide suitable replacements." This does not, of course, include the first of the 24 railcars, described in our issue of June 7, 1957. Additional buses and road haulage vehicles were completed and placed in service.

The fall in passenger receipts is ascribed to the increasing number of private cars in use, the continued competition from hackney and self-drive motorcars and the fact that during the year the weather in the summer, when tourist and excursion traffic is at its maximum, was very much poorer than in the previous year. The report comments on the improvement in passenger traffic which showed itself at the end of 1956 as the result of the petrol shortage.

—	Total	Apportionment	
		Minister for Industry & Commerce, Dublin	Ulster Transport Authority
	£	£	£
Railways			
Gross receipts 2,863,582			
Working expenses 3,731,688	(Dr.) 868,106	(Dr.) 342,324	(Dr.) 525,782
Hotels and catering	(Cr.) 460	(Dr.) 336	(Cr.) 796
Road passenger	(Cr.) 5,277	(Cr.) 5,277	—
Road freights	(Cr.) 32,033	(Cr.) 32,033	—
Howth Tramway	(Dr.) 13,285	(Dr.) 13,285	—
Balance on working accounts	(Dr.) 843,621	(Dr.) 318,635	(Dr.) 524,986
Joint lines Co. Donegal Railways Jt. Ctte.	(Dr.) 8,534	(Dr.) 5,903	(Dr.) 2,631
Miscellaneous receipts	(Cr.) 18,637	(Cr.) 6,234	(Cr.) 12,403
Balance (after adjustments for interest receivable and payment, and rentals and other fixed charges, etc.)	(Dr.) 1,177,887	(Dr.) 489,523	(Dr.) 688,364
Balance forward from previous year	(Dr.) 1,699,301	(Dr.) 559,550	(Dr.) 1,139,751
Balance carried to balance sheet	(Dr.) 2,877,188	(Dr.) 1,049,073	(Dr.) 1,828,115

Route-miles open, rail	581
Passenger journeys, rail	7,749,353
Freight tonnage, rail (tons)	1,175,923
Passenger journeys, road	10,715,635
Freight tonnage, road (tons)	371,539 (excl. livestock)

Merchandise, including coal and mineral traffic, showed a reduction of £35,640 on the rail side but an increase of £5,895 on the road side. Rail freight, including livestock, charges were increased in Northern Ireland and for cross-Border services by 15 per cent as from January 9, 1956, while rail and road freight and livestock charges in the Republic were increased by 10 per cent as from March 1, 1956. The falling off in the volume of traffic, both on rail and road, was due to the increasing competition from traders carrying their own goods, the activities of illegal hauliers, and to a recession in trade generally.

The number of livestock carried by rail showed a reduction of about 40 per cent, and by road 12,441, an increase of about 16 per cent, the gross receipts for which amounted to £78,645 and £10,045 respectively. With the cessation of Government control of marketing in Northern Ireland in July, 1954, a serious decline in livestock carryings there and from the Republic to Northern Ireland occurred and continued for the greater portion of the year. An increasing volume was carried by traders in their own vehicles. Towards the end of the year livestock traffic showed some improvement.

During the year, and due to causes over which the Board had little, if any, control, increases in salaries and wages had to be given to practically all grades of employees, which but for a substantial reduction made in number of staff employed resulting in a saving of £140,000, would have cost £220,000. The prices of virtually all materials increased from time to time throughout the year. Economies in coal consumption—a very expensive item that recently increased in price—were effected by curtailing the mileage worked by steam.

Improvements in the Rhodesian Copperbelt

BY 1961, the Rhodesia Railways expect to have spent nearly £2¼ million on way and works in the Copperbelt. This figure includes work on remodelling the Ndola yard, begun in 1951; apart from that, most of the expenditure so far incurred has been recent. The development has been so rapid that at times it has been impossible for the railways to keep pace with the expansion in the area. Within the limits of available finance, facilities for the mining as well as for the commercial and industrial communities have been improved.

The railways have tried to meet the demands of the large populations living in Copperbelt towns and, at the same time, transport adequate supplies to the mines which play such an important part in the economy of the Federation of Rhodesia & Nyasaland.

The railway development plan, prepared on traffic estimates up to June, 1961, anticipates spending £44 million on capital equipment: in some directions even longer planning periods are taken into consideration. However, up to 1961 the plan has received overall Government approval, but expenditure on various items is naturally controlled year by year according to money available.

At Nkana-Kitwe a new motive power depot and a goods shed with transhipping facilities were opened on July 30 by Sir Andrew Strachan, Chairman of the Rhodesia Railways Board. The new motive power depot means a greater flexibility for traffic operations and improved conditions for train crews who will no longer have to work out of Ndola in one shift, then book off for a rest period before being able to return to their home station. Ultimately powerful "16th" class Beyer-Garratt locomotives will be stationed at Nkana shed for this work. Shunting engines from the new shed will be available to serve the heavy industrial sites in the area.

At Ndola nearly £206,000 of remodelling work has been done. In the current financial year it is expected that £28,000 will be spent at Ndola passenger station and in making available buildings for C.T.C. Plans for spending another £186,000 in subsequent years are in the development programme for Ndola station alone.

There are plans to double the main line from Ndola to Bwana M'Kubwa at a cost of £337,000. About £100,000 of this may be used in the current financial year. For

some time it has been intended to build new stations at Luanshya and Mufulira. When this is done they are expected to cost about £15,000 each. The cost so far of the Bancroft branch is £311,800 and improvements to the permanent way, water supplies, signals and telegraph and housing are expected to cost £27,500 this year. On the Luanshya the track has been relaid, and it is planned to relay 42¾ miles between Nkana and Chingola with 80-lb. rails. Houses, flats, single quarters, stands and other such structures in the Copperbelt have cost the railways £440,000 in recent years, and further expenditure on effecting improvements is earmarked in the current financial period.

This expenditure—over £1,182,000 up to March, 1957, and more than £1,048,000 anticipated expenditure up to June, 1961—indicates the importance of the Copperbelt railway system. It has recently been necessary to appoint a District Engineer and staff to Ndola so that the way and works in the district are now supervised locally instead of from Broken Hill, as hitherto. As already recorded, £4 million is to be spent on C.T.C. The whole distance of 1,246 miles, from Umtali to Ndola, will be equipped with C.T.C. by 1960.

In the past year the position as regards the handling of traffic improved greatly, and the improvements now being made should mean that not only in the Copperbelt, but throughout the system the Rhodesia Railways will be able to meet the ever-increasing demands placed on them.

LETTERS TO THE EDITOR

(*The Editor is not responsible for opinions of correspondents*)

Modernising British Railways

August 6

SIR,—In a letter to *The Times* of July 27, Brigadier M. C. A. Henniker queried the wisdom of modernising the railways. May I quote the following paragraph (No. 17) from the Government conclusions on the British Transport Commission Proposals for the Railways (White Paper, Cmd. 9880, October, 1956):—"The national interest requires that the future of the railways should be assured. As carriers of passengers over long distances and of suburban passengers in large numbers to and from work, and as carriers of bulk freight, the railways are essential and will continue to be so for as long as can be foreseen."

As regards Brigadier Henniker's suggestion that "the modernisation of British Railways will saddle our children and our grandchildren with a considerable burden in servicing the debt," it is expected that British Railways will achieve viability at a fairly early stage in the railway modernisation programme; in this connection the Government stated (para. 24):—

"The Government consider that on the basis of the Commission's proposals there are good prospects that the railways will in due course be able not only to pay their way but also to earn an adequate surplus. In their view it would be sound financially to provide the Commission with the further finance they require to achieve this result."

Yours faithfully,

J. H. BREBNER
Public Relations Adviser

British Transport Commission,
222, Marylebone Road, N.W.1

Anglo-Scottish Passenger Services

July 29

SIR,—The Scottish Region summer timetables, the subject of an editorial article in your July 12 issue, once again reveal the failure of British Railways to provide an adequate service between London and the Highland main line, and, in particular, a through train by day between London and Inverness.

Not only has little or no improvement been made in these services in the past 10 years, but every effort is apparently made to ensure that Perth and the Highland Line stations receive no benefit from the excellent services now operating between London and Edinburgh and Glasgow. For instance, no attempt has been made to provide a connection between the down "Morning Talisman," which now arrives at Edinburgh Waverley at 2.30 p.m., and the afternoon train to Inverness, which is still booked to leave at 2 p.m. Moreover, the next train from Waverley to Inverness is timed to leave at 4 p.m., 5 min. before the "Elizabethan" is due from London. While, as your article points out, the down "Morning Talisman" and the 4 p.m. from Waverley together provide a day service from London to Inverness—albeit with a long wait at Edinburgh—this connection is carefully concealed from the public by the London to Scotland summary tables appearing in the Eastern, London Midland, and Scottish Regional timetables, which show a connection as far as Perth only.

The through trains from Euston to Perth not only exceed handsomely their 1939 journey times, but, in the case of four out of five trains concerned, are actually slower than their counterparts in 1897! The 10.10 a.m. from Euston misses the Blair Atholl train at Perth by 15 min., except on Saturdays, while the 10.50 p.m. from Euston misses a similar train by 2 min.

The only through service between London and Inverness, upon which, according to a recent letter to *The Times*, it is impossible to book a sleeping berth even three months in advance, is a train which, although it recently acquired the title of "Royal Highlander," has been decelerated in the down direction by no less than 37 min. since 1945 and in the up direction is so slow that its journey time is 10 min. longer than the corresponding train in 1897, which followed the route via Forres, longer by 26 miles. In 1900, a day train ran through from Euston to Inverness in 13¼ hr. Services at least as good should be provided now.

Yours faithfully,

B. D. J. WALSH

The Railway Club, 320, High Holborn, W.C.1

Track Loading Fundamentals

August 2

SIR,—I refer to the letter from Mr. A. H. Toms appearing in your issue of July 12. The articles by me clearly stated that bridges in British practice are designed to B.S. 153 of 1925 (since superseded by B.S. 153 of 1954) and bridges in American practice to Cooper's Loading.

I regret I cannot agree that the stresses in the rails themselves are a function of total axleload (wheelload?) only. Relief of stress afforded by neighbouring wheels cannot be ignored.

It would be interesting to know whether British Railways have evolved any rational method of determining ballast depth required on a given formation.

Yours faithfully,

C. W. CLARKE

Western Australian Government Railways,
Central Station, Perth

THE SCRAP HEAP

Delectable N.B.G.R.

A delectable little railway running south out of Jesselton in North Borneo [the North Borneo Government Railway] has been there 50 years, but it is the only one in the three territories [of North Borneo, Brunei and Sarawak] and still has no road to keep it company. (Monopoly has not soured this railway, for the drivers will drop you at the nearest track point to your hut, and have been known to stop to enable a visitor to pick a rare orchid.)—*From "The Times."*

Platform Fashion Parade

An increasing contemporary hazard is that of walking into a film. Regular travellers on a suburban up platform recently found the down platform occupied by a unit from Pinewood, filming a sequence in the escape of a German prisoner of war for "The One that Got Away." All the actor, in his hot flying clothes, had to do was trot across the line, and what really fascinated the onlookers was the colourful dress of the people engaged in filming him, particularly the director's hat, a white affair with square crown and green underbrim that was plainly an American version of the old sola topee. — *From "The Manchester Guardian."*

Guard Duties

The driver and stoker may be useful, but the guard is "the cynosure of all eyes. 'Where is the guard?' cries the aged dame transfixed among a pile of trunks. 'Where is the guard?' shouts the stout gentleman, vainly seeking his smoking compartment; and 'Where is the guard?' echoes the bewildered young lady, who has lost her lap-dog and her temper. To all and everybody the guard is the leader, the representative of the train. Proudly as Louis XIV. in his royal robes, the British railway guard, standing in full uniform at the side of the winged express preparing to start, may lay his hand on his heart and say, '*Le train, c'est moi*'."—*From "Our Iron Roads," by Frederick S. Williams* (1884).

Captain Peel's Railway

On June 23, 1857, the 3¼ miles of railway between Sandy and Potton (Bedfordshire) was opened for public traffic. The line had been built at the expense of Captain Sir William Peel (1824-58) without any statutory authority. He never saw his railway in operation, as he died at Cawnpore on April 20, 1858, after 13 months' absence on China and Indian Mutiny service, during which he led the naval brigade that dragged the 68-pounders to the second relief of Lucknow. Steam-operated goods traffic was carried on the Sandy and Potton line from the outset, and public passenger traffic from April, 1858. This private railway was taken over in 1862 by the Bedford & Cambridge Railway, an off-shoot of the L.N.W.R. and was re-opened as part of a through line on July 7, 1862.

A 100-year survivor of the original enterprise is the locomotive *Shannon*, which was built by George England & Company, of the Hatcham Iron Works, near New Cross, and cost £800; it was named after the steam frigate commanded by Captain Sir William Peel, R.N., V.C., and was named by his mother, Sir Robert Peel's wife, on June 17, 1857. After many vicissitudes, this locomotive finished its working life on the Wantage Tramway, and was ultimately acquired by the G.W.R. for permanent preservation mainly through the interest of Mr. F. W. Hawksworth, then Chief Mechanical Engineer. It survives on the down platform at Wantage Road Station.

Dean's Ambition Achieved

The Dean of Roskilde Cathedral, the Very Rev. Einar Ege, fulfilled a childhood ambition recently, when he drove a steam locomotive some 30 miles between Roskilde and Slagelse on the Danish State Railways main line. He wore a driver's cap and overalls.

Rising to the Occasion

(*See "The Scrap Heap" of July* 26)

My note on the South African who complained that British Railways do not change travellers' cheques has brought me a triumphant letter from a Holkham reader. He performed this impossible feat at Waterloo.

The circumstances, however, were special and establish no precedent. He was en route for St. Malo and had left his tickets at home.

I said it was as reasonable to expect B.R. to act as a bank as to expect banks to issue railway tickets. But these are sometimes sold in odd places.

Railway tickets may be obtained at the Post Office at Appleford, Berks, where the station is only a halt. Similarly, passengers at Dilton Marsh, Wilts, go to the village store for their tickets. —*"Peterborough" in "The Daily Telegraph."*

This Year . . . Next Year

This is the time when Parliament
Sits down to contemplate
The pros (if any) and the cons
Of industries of State.
Some take an optimistic view,
Others prognosticate
Their relegation to the ranks
Of things inanimate.

It seems (reports the Minister,
Cross-fingered against fate),
That railway prospects may improve
In 1958.
Main-line electric locos will
Step up the progress rate
And, by this time next year, it's hoped
No train will dare run late.

The ebbing tide of traffic will
Come flowing back in spate,
New trains will draw more passengers
In 1958.
Alas, if I, in Irish vein,
May dare expatiate,
There doesn't seem much future just
At present about freight!

So far as I'm concerned, next year's
A most auspicious date:
I draw my Old Age Pension
In 1958!

A. B.

Special Excursion for Photographers

Excursion train from Glasgow to Killin for amateur photographers, at Balquhidder, Scottish Region

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

Level Crossing Accidents

Much concern is felt at the number of accidents which have taken place at level crossings. Various protective methods have been considered including the use of reflectors or luminous paint on wagons and locomotives

This method is not favoured as dust and dirt would reduce the effectiveness very quickly and, in many cases, tarpaulins would cover the reflecting surfaces. Such an arrangement might even be dangerous unless the wagons of other railways were painted in the same manner.

Booms

The provision of booms has been considered but it is not necessarily satisfactory. The boom in Selborne Avenue, Bulawayo, erected over the old line in 1953, was smashed by a motor car despite lamps on the boom itself, a flashlight signal and warning bells. In many instances the lack of electricity supply makes for difficulty in connection with any protection or warning system.

INDIA

Rebuilding of Bombay Churchgate

The new Bombay Churchgate Station, now rebuilding, served by multiple-unit suburban electric trains of the Western Railway, will ease the present overcrowding on the line by making possible an increase in the frequency of trains; the traffic moreover has grown in recent years and is still growing.

The new Churchgate yard will have an additional line for the reception and despatch of trains and two extra stabling lines to enable rakes to be worked into and outside Churchgate Station at frequent intervals during peak periods. It is also proposed to provide two platform faces for each of the three lines to facilitate quick entraining and detraining on both sides.

Linked up with the yard remodelling is the reconstruction of the station building. The new structure has been designed in keeping with the present needs. Its concourse hall will measure 116 ft. by 44 ft. A subway will connect the platforms. A commodious parcels office is being constructed. The new station building will also embody additional office accommodation, which is badly needed.

Before the old station could be dismantled, a temporary terminal station had to be provided. This, including electric traction and signalling, has been arranged to fit in with the final layout, so that there would be no further disturbance in working.

VICTORIA

Intricate Track Repair Work

Worn-out crossings over a distance of 400 ft. were repaired during a recent weekend under Princes' Bridge at the eastern end of Flinders Street Station, Melbourne.

Limitations of space and time added to the difficulties. Work was planned not to interfere with heavy traffic into and out of the station and to finish before first trains started on the Monday morning. Three gangs of 40 men worked in 8-hr. shifts each.

Material used included 300 ft. of heavy timber, 77 tons of rail, points and crossings, and 250 tons of ballast. Rail crossings were pre-assembled and loaded into seven wagons by two steam cranes. Work trains were hauled by diesel-electric locomotives.

Each piece of timber, rail, point and crossing was numbered to facilitate assembly on the spot. Special teams of signalmen were on duty during the weekend to ensure smooth operation of interlocking.

Most country trains which normally arrived at or departed from No. 1 platform at Flinders Street (which was the one chiefly affected) were diverted to other platforms.

ARGENTINA

Track Renewals

The General Roca Railway has called for tenders for the renewal of track on the Bahia Blanca-Neuquén line and the Buenos Ayres-Mar del Plata line. The D.F. Sarmiento Railway has also called for tenders for the renewal of track between Villa Luro and Moreno.

Railway Technicians Visit United States

Messrs. C. F. D'Alesio, Chief of the Way & Works Department of the General Roca Railway, A. S. Butti, Chief of the Way & Works Department of the General Urquiza Railway; and Luís Arturo Hughes, District Engineer of the General Mitre Railway, have left for the United States to study modern methods of track maintenance.

BRAZIL

New Iron Ore Line

Because of Federal and State delays in authorising construction of the Itabirito-Andrelandia railway, referred to in *The Railway Gazette* of July 7, 1956, Ferrostaal of Essen, the financing company, is considering withdrawing its offer and investing capital at Tindouf, on the Moroccan-Algerian frontier. The object of Ferrostaal, which is already associated with a Brazilian steel manufacturer at Victoria, Espirito Santo, was to supply its German plants from the Thyssen deposits of 68 per cent ore at Itabirito. The ore was to have been shipped from Angra dos Reis to Germany in the company's own ships, which would carry coal on the return journey.

Paulista Railway Results

The annual report issued of the Companhia Paulista de Estradas de Ferro quotes receipts in 1956 at cruzeiros 1,321,617,702 (say, £6,608,089 at the free exchange rate) and expenditure at crs. 1,268,590,625. The balance of crs. 53,027,077, plus part of the profits carried forward from 1955, covered transfers to the reserve and other statutory funds and gave a dividend of 8 per cent.

German Insulated Banana Wagon

German Federal Railway ordinary covered wagon converted and adapted as insulated banana wagon (see article in our July 5 issue)

The company carried 12,806,630 passengers, 772,821 head of cattle and 2,939,285 tons of freight last year.

Payments to the staff accounted for 70 per cent. of the total expenditure, the highest percentage recorded to date. Payments in respect of amortisation and interest on loans, granted by the Export-Import Bank and the Brazilian Development Bank (B.N.D.E.) amounted, respectively, to crs. 405,799,192 and 10,146,488 and were met out of the proceeds of the Improvements and Renewals Fund.

The company has now received a loan of crs. 241,000,000 from B.N.D.E. to finance the Adamantina-Panorama extension.

FRANCE

Automatic Luggage Lockers

Following the example of a number of other European railway administrations, the S.N.C.F. has installed automatic luggage lockers at certain stations in Paris and other towns. While these are basically the same as those in use in Great Britain, they have been constructed specifically to meet S.N.C.F. needs. Average dimensions of lockers are: depth 2 ft. 7 in., width 1 ft. 4 in., and height either 1 ft. 4 in. or 1 ft. 10 in. The lockers are brought into use by the introduction of a 100 franc piece (2s.); this fee covers the first 24 hr. of use. After the expiration of this period the luggage can be obtained either by making a further payment at the left luggage office or, in the case of certain types of locker, by the insertion of a further coin. If the key is lost, a charge of 500 francs is made and the lock changed.

DENMARK

Strengthening Overbridge

At Osterport station in Copenhagen one of the main streets is carried over the State Railway four tracks on a bridge constructed in 1911. As the bridge deck was built without a proper waterproofing layer, water had penetrated the concrete and caused disintegration in the supporting Visintini pre-fabricated reinforced concrete lattice girders, and in the piers and capping girders over their columns, which are all of concrete.

As the road traffic over the bridge and also the rail traffic under it are extremely heavy, a complete renewal of the bridge was not to be thought of. The only possible solution was therefore a complete overhaul and reinforcement of the piers by means of spray concrete.

The columns were repaired by removing all the poor concrete, using compressed air tools and sandblast, before fresh concrete was sprayed. Similarly, the poor concrete was removed from the capping girders over the columns, which were then strengthened, reinforcement being placed round the beams and fresh concrete sprayed. The opportunity was also taken to corbel the sides of the beams outwards, so that the area, on which the Visintini girders rest, has been widened by 6 in. on each side. During the repair work the load was carried on heavy timber columns.

Moreover, the deck was damaged not only by water penetration, but also by locomotive smoke fumes, and it has therefore to be strengthened to carry still heavier road traffic by using prefabricated prestressed concrete girders.

SWEDEN

Progress of Stockholm Underground

The central portion of the Stockholm underground railway, from Kungsgatan to Slussen, is due to open on November 24. This will link the northern and southern Tunnelbana sections, at present not physically connected.

The next extension to be opened is a branch in the south-west to Finn Malmgrens Plan, to be inaugurated next April, and extended later to Bagarmossen.

Publications Received

Branch Lines. By O. S. Nock. London: B. T. Batsford, Limited, 4 Fitzhardinge Street, Portman Square, W.1. 8¾ in. x 5¼ in. 184 pp. Illustrated. Price 25s.—The attention focused on branch lines during recent years makes this book the more welcome because it is the first general survey of the subject. From a review of the inception of branches as feeders to the main trunk routes, and of such lines in their heyday, the author passes to a consideration of some of the problems of branch line operation, and to lines built under the Light Railways Act of 1896. The decline and closure of many branch lines, particularly in rural areas, is discussed, and appreciation is expressed of the efforts of those who have successfully revived the narrow-gauge Talyllyn and Festiniog Railways, in North Wales. The numerous illustrations have been chosen to cover a wide range of subjects.

The Road Traffic Act, 1956—With Introduction and Annotations. By Robert Schless. London: Butterworth & Company (Publishers), Limited, 88, Kingsway, W.C.2. 9¼ in. × 6¼ in. 153 pp. Price 25s.—This book is a most useful guide to those concerned with the operation of road vehicles, students of transport, and others to whom an understanding of the complexities of the 1956 Road Traffic Act is of importance. There is a general introduction to the Act, with a comprehensive table of cases, and the main part of the book consists of the provisions of the Act itself with copious notes on each Section. The index includes references to the notes.

Railway Photographs Catalogue.—This booklet, which has been produced by the Locomotive Publishing Co. Ltd., Craven House, Hampton Court, Surrey, is the first postwar catalogue of more than 5,000 of the total of 25,000 negatives which the company holds in its collection. The present list covers approximately the original "F. Moore" and "Bleasdale" collections. The fact that prints from at least some of the large collection are once again available should be of great interest to railway enthusiasts. The catalogue costs 2s.

Roller Bearings.—The name RIV is well known in connection with roller and ball bearings for almost all purposes; and as far as railway applications have been concerned the large number of axleboxes supplied has been supplemented by installations in transmission shafts, traction motors and so forth. The English edition of a 112-page book discusses the principal types of axlebox bearings and gives illustrations of some of the motive power and rolling stock in numerous countries fitted with this make of bearing, and there are chapters on such bearings in diesel and electric locomotive transmissions and drives; also a short note on applications of bonded rubber which is another of the RIV railway specialities handled from the RIV sales office at Corso Matteotti 31, Turin, Italy.

French Railways Self-Drive Cars.—A leaflet obtainable from French Railways Limited, 179, Piccadilly, W.1, or from principal travel agents describes the S.N.C.F. self-drive hire service of Renault and Simca vehicles at a number of stations in Paris and elsewhere in France, and also in Corsica.

Les Buffets de Gare, 1957.—This folder issued by the French National Railways contains a list of over 100 station refreshment rooms on the S.N.C.F., the names of the concessionnaires, and the prices of the "regional" meals (including wine of the country and one special regional dish) and of the "autour d'un plat" luncheon or dinner. Brief descriptions in English and German indicate the nature of the meals and the facilities available for reserving tables.

Fort William and Mallaig—An attractive folder issued by the Scottish Region contains a sketch map of the country traversed by the West Highland line between Fort William and Maillaig, over which an observation car is run during the summer season; the principal mountain peaks are shown on the map. A train with observation car attached is depicted in the folder, crossing the Lochy Viaduct.

Comparison between Steel and Aluminium Passenger Vehicles—1

Study of economies in operation and maintenance in vehicles of identical dimensions on Toronto Underground

MR. L. W. BARDSLEY, Superintendent of Electrical Equipment, Toronto Transit Commission, has reviewed, in his paper to the General Summer Meeting of the American Institute of Electrical Engineers held recently in Montreal, practical operation and maintenance cost comparisons between a number of otherwise identical steel shell and aluminium shell underground coaches running under exactly similar service conditions. The substance of his report appears below.

The Toronto Transit Commission, to operate its Yonge Street underground line which opened in 1954, contracted for delivery in 1953 and 1954, for 104 steel cars to be manufactured by the Gloucester Railway Carriage & Wagon Co. Ltd. During the course of construction in 1952 and 1953, the Commission was approached through the manufacturer by the Aluminium Development Association of this country to consider the construction of a number of these vehicles in aluminium rather than steel.

As a result of discussion with the A.D.A. and the contractor, the Commission revised its order to 100 coaches of steel construction and four in aluminium. These steel and aluminium shell coaches were described in our issues of January 8 and December 3, 1954, respectively. By this means, since the cars were identical in all respects other than the use of aluminium, "in-service" testing and experience would thus be possible to determine if the improvements in operation suggested through the use of aluminium would justify the increased initial capital costs.

The advantages claimed for aluminium in respect to mild steel are much more favourable strength-to-weight ratio, superior corrosion resistance, and the ability to be used in an unpainted condition. From these considerations it might be expected that savings in operation would arise in areas affected by weight, and in maintenance costs through reduced corrosion of body members.

In any comparison of vehicles, where performance is in question, one of the fundamental factors for consideration is the relation of schedule speed and power costs. An examination of any operating line must consider passenger density, headway, cars per train, and scheduled speed. Headway and train size are influenced by passenger density and associated with service facilities such as station lengths and station exits and entrances. In a given set of conditions of passenger density headway and train size, a variety of scheduled speeds and number of trains and consequently cars required for service, can be ascertained. However, train speed variations reflect variations in power consumption. For an economic analysis, therefore, the initial capital cost for cars required for a service should be analysed in respect to annual operating costs of train crews, power consumption, brake shoe life and other allied factors.

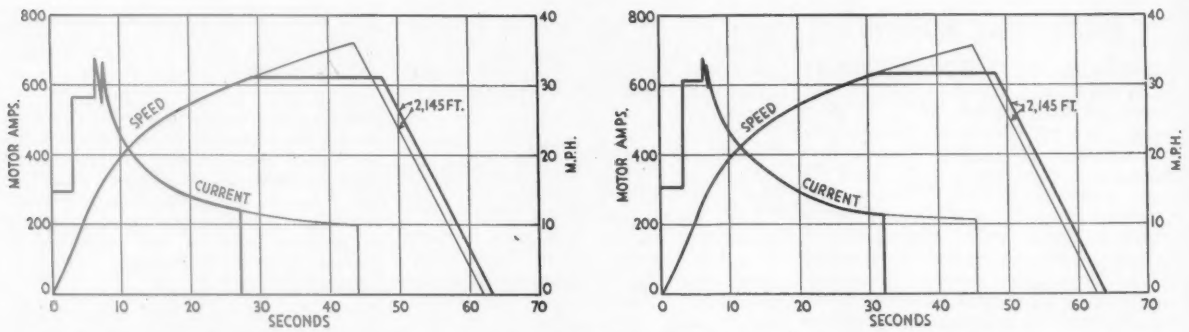
There are two ways of comparing such vehicles as steel and aluminium coaches where a weight reduction has been obtained by the use of light alloys. One method is to maintain the same operating schedule with the lighter vehicle, allowing for a lower operating cost. The other is to use the weight reduction to obtain a faster schedule speed for the same power usage. The faster scheduled speed could result in a reduction in a number of trains operating a service with a consequent saving in train crews and initial capital outlay for rolling stock. As the aluminium coaches operate in a mixed service with the steel cars, and must therefore operate the same schedule, the comparison of performance must be on the first method outlined above.

With these factors in mind the Commission decided to establish comparative tests on certain components and operating cost areas where definite savings might be expected. There were: (*a*) factors influenced by weight reduction—(*i*) tractive power costs, (*ii*) journal and drive unit bearing life, (*iii*) wheel and brake shoe life, (*iv*) permanent way life and maintenance and (*b*) factors influenced by corrosion resistance, such as body maintenance costs.

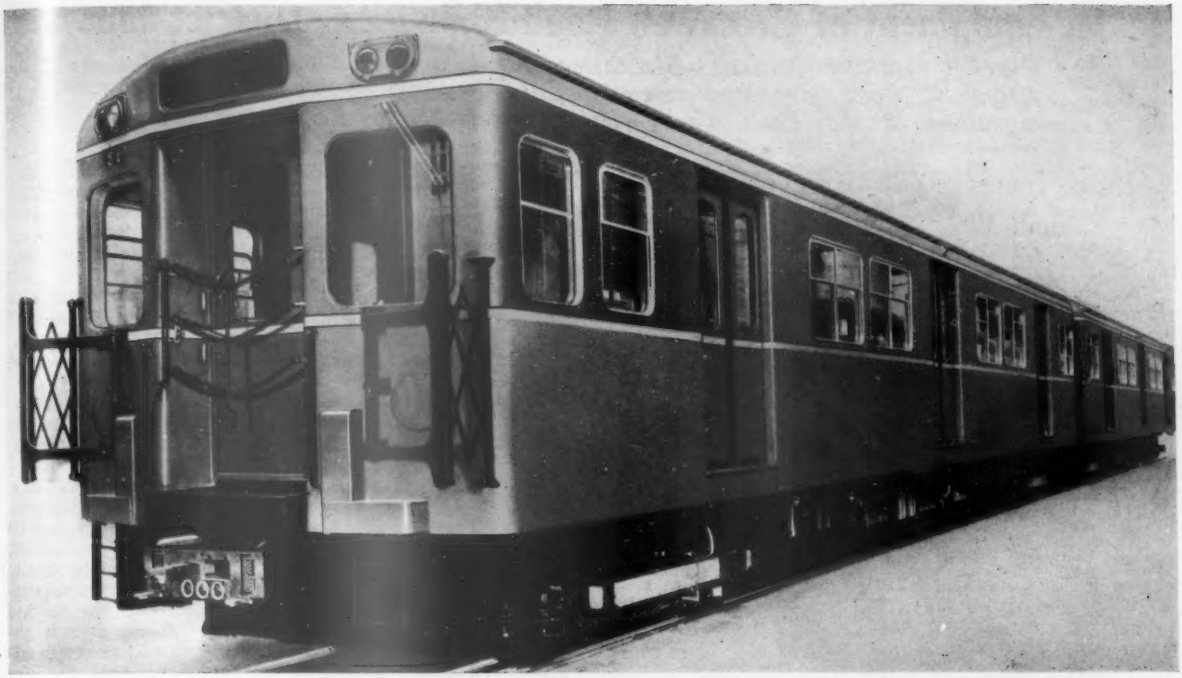
By assigning values to the saving factors determined and amortising the initial vehicle costs over a 30-year period a realistic picture of the financial relationship of the steel and aluminium underground stock can be obtained. The relatively short "in-service" life of the vehicles to date does not permit complete actual analysis. However, the calculated effects together with actual results where possible have been compiled.

Structure and Weight

The steel and aluminium vehicles are basically similar in body appearance excluding the essential difference in material. As mentioned in the description of the lighter stock in this journal the entire body shell, including side-frames and equipment mounts are constructed of aluminium alloys, with the one exception of the body bolster which is retained in steel, this latter being necessary because of space restrictions and vehicle standardisation coupled with the low elastic modulus of aluminium. Additionally, because of the small number of cars involved, the aluminium members were fabricated from standard shapes in many instances where, if quantity permitted, a more advantageous strength-to-weight ratio might have been obtained through the use of special extruded shapes possible with aluminium. On consideration of this and other factors, it would appear that without limitations imposed by the steel prototype and the necessity for standardisation for equipment



Figs. 1 and 2—Speed and current/time curves for aluminium (left) and steel cars, Toronto Transit Commission



Steel car built by the Gloucester Carriage & Wagon Co. Ltd. for the Toronto Transit Commission

mounting, a lighter aluminium car could be produced within the dimensional framework imposed by the loading gauge.

Power Consumption

In considering the probable effect on power consumption of weight reduction, the ratio of power saving in relation to weight saved is an important factor. The fundamental equation Tractive effort = Weight × Acceleration/g would suggest that power consumption and weight should vary directly. However, it is equally apparent that other factors of losses due to rotating equipment within a vehicle; train resistance—a function of vehicles shape, weight and speed; and friction at bearings, all contribute to modify the simple relationship of force and acceleration.

Two methods have been employed by the Toronto Transit Commission in attempting to obtain power consumption comparison of the steel and aluminium stock. These are by calculation and also by direct measurement in service through the use of installed meters.

For comparative calculation of the effect of weight reduction on power consumption the following conditions were established:—(*a*) assumed length of run of 2,145 ft., representing the average "between station" distance on the Yonge Street line; (*b*) run on tangent track of 1·2 per cent up and 0·56 per cent down, which is an average run for the line (*c*) acceleration rates approximately the same on both car types; (*d*) tare weight of steel car of 83,670 lb.; (*e*) tare weight of aluminium car of 73,250 lb.; (*f*) assumed passenger weight per car of 10,000 lb.; (*g*) same schedule speed, and same motors and field shunting.

The cars under consideration were identical in respect to body profile, mounted underbody equipment, trucks and motors. For the purpose of the comparison, scheduled speed or run time was held approximately constant for each car. The motors were indentical in characteristics and field shunting, the only effective variable other than weight which might affect energy consumption was accelerating amperes and coasting.

Within the framework of identical time and distance, a number of variations in accelerating amperes and coasting can be obtained. For practical comparison, however, the most realistic assumption would appear to be to maintain acceleration as alike as possible in both cases.

On the basis of the conditions outlined, therefore, performance speed/time and current/time curves for the aluminium and steel cars were developed as seen in Figs. 1 and 2. From these curves it was found that with the heavier stock with a gross weight of 93,670 lb., power consumption was 4·8 kW.-hr. per car mile. For the lighter stock where the gross weight was 83,250 lb., a weight reduction of 9 per cent, the power required was 4·4 kW.-hr. per car mile, a power requirement saving of 8·3 per cent.

With a view to subsequent power consumption test, the Commission during construction of the vehicles arranged for the inclusion of eight resilient mounted watt-hour meters in four steel and four aluminium vehicles for measuring traction power consumption. The eight coaches entered service in March, 1954, and monthly readings of the meters were taken. The average power consumption obtained through these meters between March, 1954, and January, 1956, gave power consumptions which were identical with the calculations, that is, 4·8 and 4·4 kW.-hr. per car mile for steel and aluminium stock respectively. It should be noted, however, that the actual gross service weights are not known. The fact that calculated and actual results were identical is felt to be coincidental as direct measurement of power includes variables of passenger loadings, train make up and actual coastings; any theoretical determination of these figures would be extremely questionable. Nevertheless, London Transport calculations have shown correlation between the theoretical and practical results.

It should be noted, however, that the investigations of the Commission into the theoretical calculation resulted in a re-analysis of the assumed 10 per cent "rotational loss" commonly used in loss calculations. For the T.T.C. vehicles in question this actual loss was calculated as almost 18 per cent of tare weight or the equivalent of 15,000 lb. Coasting is another extremely important variable. From the curves, it is easily seen that for a small increase to run time, considerable coasting can be inserted resulting in a major reduction in power consumption.

For the purposes of this study, however, the actual power saving of 0·4 kW.-hr. per car mile was used.

(*To be continued*)

Re-equipment of Cromwell Road Signalbox, District Line

Parallel working between Gloucester Road and South Kensington: Cromwell Road signalbox re-equipped to provide remote control of signalling in the Earls Court—High Street—South Kensington area

Cromwell Road signalbox, District Line

ON the night of July 27-28, London Transport brought into use a re-arrangement of its lines on the western side of Gloucester Road station, to provide parallel working instead of alternate working through that place and onwards to the junction east of South Kensington station, where main and Circle lines previously came together, and which of course also has had to be modified to suit, whence an ordinary double line continued eastward. The northern of the twin tunnels from Gloucester Road to South Kensington now carries the eastbound traffic and the southern the westbound. Normally eastbound trains, Circle or other, now travel over the most northerly line, formerly the "inner rail" Circle line, the adjacent one carrying occasional non-stop movements, leaving no doubt from which platform the first train leaves.

The "outer rail" Circle trains now use the former eastbound District track while westbound District trains continue to run as before. A disadvantage of the old arrangement, which dates back over 80 years, was that an "outer rail" Circle train often had to be stopped at the westbound home signals for South Kensington while an eastbound District train left the station and crossed its path, creating at times troublesome delays to following movements. Under the new arrangement such a train can run directly into the station and clear the junction at once.

Development of the Lines

The lines in this area were constructed by the former Metropolitan and Metropolitan District Railway Companies, initially as part of a plan recommended to Parliament and sanctioned by it in 1864 for an "inner circle" railway. The line from Praed Street Junction, Paddington, to Gloucester Road, was opened on October 1, 1868, and onwards through South Kensington and Victoria to Westminster on December 24 following. This was Metropolitan property to a point just east of South Kensington and District thereafter. A crossover junction, then situated west of that station, the location of which can still be detected, communicated with the District-owned lines in the parallel tunnel, over which trains began to run in August, 1870.

In 1869, however, the District Railway had built lines from Gloucester Road and High Street, Kensington, through Earls Court, with a station there east of the roadway, to West Brompton, which was a terminus until 1880, but no service ran from High Street until July, 1871, in which month the District opened its own and southern half of South Kensington station, the junction with the Metropolitan Circle route being transferred to a point east of that place.

In 1870 the District Company built from a point south of its own tunnel below High Street a spur line to its tracks at Gloucester Road, known as the Cromwell Curve. This was removed when work was commenced on the air terminal, recently erected over part of the open space there, by which time it was being used by "inner rail" Circle trains in the late evenings and on Sundays. A bay line in the centre of South Kensington station, used originally when changing the steam engines of Metropolitan "outer rail" trains and later for electric services terminating or starting from there, also has been removed. The first Earls Court station was burned down in 1875.

A new station on the present site, west of the roadway, was opened on

Interior of Cromwell Road signalbox, showing the two control desks, containing 58 and 42 push-buttons respectively and telephone and train describing apparatus, with illuminated diagram of revised track layout

February 1, 1878, simultaneously with a burrowing junction, enabling trains from High Street to reach there without crossing the main lines, used today by Edgware Road—Putney Bridge and certain other trains.

Signalling

Originally there were separate mechanical type signalboxes on the lines of the two companies, one or two of which, such as the Metropolitan box at the west end of South Kensington station, long remained in use, with of course manual block apparatus at first.

At electrification the District Company installed electro-pneumatic power signalboxes at Earls Court West and East, brought into use in the autumn of 1905, and at Cromwell Curve and South Kensington, opened in January, 1906. (At High Street the mechanical type lever frame was retained but arranged to control power signals.) Cromwell Curve box, which had 47 levers and a considerable amount of signal selection, controlled the working of three groups of stabling sidings for electric stock, but with the building of the air terminal extensive alterations became necessary and there are now only six connecting with the line from High Street, with crossover just beyond, and two connecting with the line to High Street.

In 1936 the area was completely re-signalled on a route relay interlocking system, which had been tried first at West Kensington in 1931. The Cromwell Curve box was replaced by one called Cromwell Road, a little nearer Earls Court and west of the bridge carrying that road over the line, while new remotely controlled boxes were provided at High Street and Earls Court West. (The Traffic Department decided, however, to keep the latter practically always manned and therefore in fact locally worked.) The original Earls Court East electro-pneumatic box, on a gantry over the lines, became a relay room. The signalmen normally had not to concern themselves with the operation of any points and directed the train movements entirely by the actuation of "push and pull" type route levers, under pre-selection facilities.

With minor changes, such as replacement of the electro-pneumatic semaphores by colour-lights and junction indicators and so on, this apparatus remained in service until the major changeover here being dealt with, as did the Metropolitan mechanical and District power boxes at South Kensington.

To allow continued use of the Cromwell Road box for the control of the new layout a temporary timber structure was erected alongside, in which 3-position telephone switches took the place of the route-levers. This enabled all the original equipment to be removed and the new installed, the route-lever frame being replaced by two push-button desks, as hereafter described. These were then used during the week preceding the final stage of the changeover to control the original layout, which greatly facilitated it.

New Layout

The arrangement of the new track and signal layout is shown on the accompanying folding plate. At South Kensington the two eastbound lines, for stopping and non-stopping services, converge over spring toggle points, while the westbound line from Sloane Square diverges as now but leads to the two lines in the southern half of the station. The bay line there, prolonged eastward as a siding, has been retained and, by means of three crossovers, trains therein can pass either to the District westbound or main City eastbound routes. The old central bay line, which communicated with what were then the two Circle lines has, as mentioned, been taken out.

The local actuation of points and signals is effected by an interlocking machine, with associated relays, etc., placed at the east end of the centre platform. At Gloucester Road the eastbound line from Earls Court has been slewed over to enter the northern of the two tunnels, with crossover connection for reaching the Circle "inner rail" at both ends of the station. The "outer rail" to High Street also of course had to be re-aligned to lead from the northern line in the southern tunnel, which has a crossover to the westbound District line to Earls Court while another connects the two Circle lines north of the station. There is a second interlocking machine at this place and a third by the triangle sidings.

At High Street the layout remains unaffected and the remotely controlled signalbox, normally unstaffed, is retained. At all other stations, however, and intermediately throughout the area the signals have been to some extent re-arranged, not only to conform to the altered track layout but to shorten the block sections where required. At Earls Court also the tracks remain as before but the West signalbox, hitherto usually kept manned, is now a relay room. All signal aspects conform to L.T.E. standards, with floodlit discs for shunting and subsidiary signals. A junction indicator is repeated in miniature above the repeater signal referring to the signal advance which carries it. In the open sections fog repeaters are used as considered necessary, illuminated when visibility is impaired.

New Signalling

The whole of the signalling in the area covered by our plate is now controlled from Cromwell Road box by two push-button desks, dividing the work broadly between east and west halves of the layout, on the principles explained in the article in our issue for February 1, 1957, in which the new signalling at and near Farringdon, Metropolitan Circle Line, was described. Route-setting is used, with pre-selection facility as formerly provided here, by which after a route has been established and signalled for a movement another conflicting therewith can be prepared by operating the relevant push-button, the controls remaining stored until conditions allow of their becoming effective, the second route being then set up step by step as the train clears the various fouling points. A single button is allocated to each route and, again if conditions permit, any route set by pressing a button can be released and the signal or signals returned to danger by pulling it.

All vital interlocking and other safety control circuits are arranged either in a relay or interlocking machine room, or the retained signalbox at High Street, the function of the Cromwell Road signalbox now being to send out orders to, and receive confirmation of the result from, these outlying locations. Traffic is very heavy at the peak periods and the comparatively limited track facilities have to be used to the utmost possible advantage. The signalling sections have been made as numerous and short as is consistent with safety and the provision of adequate overlap distances to permit of the train stops functioning as intended should a signal accidentally be overrun.

Jointless "Rail Circuits"

Track circuiting equipment follows L.T.E. standard practice, as described in connection with the Farringdon installation but the so-called "rail circuits"—very short length track sections operating on the normally de-energised principle—used in association with ordinary track circuits to release facing point route locking, signal back-lock or delayed clearance controls, are of a novel type recently introduced. By using a relatively high frequency current—10,000 cycles—it becomes possible to obtain the desired effect without any additional insulated rail joints, previously unavoidable, an advantage greatly appreciated by the Civil Engineer. A full description of this arrangement will appear in our columns shortly.

Through and Junction Working

Certain signals can be made to function automatically, free from constant control from the signalbox, when traffic conditions permit, with consequent relief to the signalmen, who initiate such working by actuating the appropriate key on a switch panel mounted on the wall behind them. At Earls Court and South Kensington the setting of junction points and clearing of certain signals can, when required, be made to take place under the control of the information stored in the train describers. Formerly South Kensington was a re-describing point for information received from Mansion House, but now the descriptions transmitted from the latter station are received in the apparatus in Cromwell Road box. Platform indicating boards have, of course,

Interior of South Kensington interlocking machine room, remotely controlled from Cromwell Road signalbox, showing (left) the machine and (right) the signalling relays for the local area

been moved to the new positions necessitated by the alterations in the use of certain lines. Such special working also is brought into operation by actuating a key on the switch panel. The circuits are so arranged that no condition already set up can become altered in any way that could affect safety adversely should a key be actuated.

Telephonic Communication

As in previous installations a very complete system of telephones connects the signalbox with the various stations, depots, etc., and the Traffic Controller, while there are also of course telephones at certain signals for the use of motormen and drivers detained thereat, or other staff in emergency.

Relays

Relays used in non-safety circuits are again of the P.O. 3,000 type, fitted in the Signal Engineer's own shops in perspex cases, sealed by a resin potting process, drained in vacuum and filled with nitrogen through a small hole left for the purpose, itself then sealed. Plug and socket connections are provided, with arrangements for preventing relays constructed for one function being connected to circuits to which they do not refer. Relays in interlocking and other vital signalling circuits are of the well-known designs long used in this class of work.

Cables

At Farringdon a prototype length of special "thin" type multi-core cable—illustrated in detail in our issue of February 15, 1957—was used for certain indication circuits which work at 100 V. d.c., enabling very small sized conductors to be used satisfactorily, in this case 0.01 in. diameter. At Cromwell Road box cables of this kind are used for the indicating circuits connecting with Gloucester Road and South Kensington. By this means it becomes possible to convey a large number of indications over the required distance at reasonable cost without having to resort to "coding," with its consequent additional apparatus, to keep the number of conductors to a minimum.

The installation was designed and installed to the directions of the Chief Civil Engineer, London Transport Executive, Mr. C. E. Dunton, by the staff of the Signal Engineer, Mr. R. Dell. The Westinghouse Brake & Signal Co. Ltd. supplied the control desks, the "rail circuit" feed sets, and all safety circuit signalling relays. Relays used in non-safety circuits, as above described, were obtained from several manufacturers of telephone apparatus, and the special thin wire cables from the General Cable Manufacturing Co. Ltd. Other cables and wiring came from British Insulated Callender's Cables Limited and the Concordia Electric Wire & Cable Co. Ltd. The train describer apparatus already in service, of the drum storage type, in use for 50 years along this part of the District line, was re-arranged and modified to meet the altered conditions by the Signal Engineer's own staff.

British-Built Diesel Locomotives in Malaya

One of the 20 1,500-h.p. diesel-electric locomotives, supplied to the Malayan Railway by the English Electric Co. Ltd. and described in our April 5 issue, being towed to the locomotive depot after unloading at Singapore. The shunting locomotive is one of 20 built in 1948 by the English Electric Company

Improved Heating Plant at Slade Green Electrical Repair Shed

Equipment installed with minimum of interference to maintenance routine

THE problem of achieving an adequate degree of warmth in any maintenance depot, particularly at the ends of a building where doors are frequently opened, thus allowing cold air to reduce the temperature, is one which is occupying the minds of railway authorities, especially in view of the higher amenity standards which obtain today besides the provisions of the Factory Acts. The new heating plant at the Electrical Repair Shed at Slade Green, Dartford, Southern Region, which was brought into operation in March of this year, is designed to adequately meet these problems.

The previous heating installation at the depot comprised five separate plenum air systems, each with a range of galvanised sheet steel ducting for distributing warm air throughout its zone in the shed. The system was designed to give an internal temperature of 50° F. when the outside temperature was 30° F., but in actual practice this temperature was rarely achieved, particularly at the ends of the building, due to the frequent opening of the roller shutters and the influx of cold air. Because of the factors outlined above it became desirable to overhaul and supplement the existing heating plant to obtain an internal temperature of 60° F., allowing one complete air change per hour.

Existing Boiler

A scheme was therefore devised for the overhaul and repair of the existing plenum plants and the installation of 20 suspended unit heaters, disposed mainly at the ends of the shed. The existing hand-fired boiler, supplying steam to the plenum systems, was built in 1896 and had been transferred from the Waterloo Station Plant in 1938-9 and was only capable of an output of 4,750 lb. steam per hr. under ideal conditions. Since this boiler was life-expired and also was not capable of supplying the steam demand during cold weather, it was decided to install a modern oil-fired Paxman Economic boiler having a duty of 10,000 lb. steam per hr. at 100 lb. per sq. in. working pressure. The scheme design included the provision of central heating to the staff accommodation by means of hot water radiators, together with hot water supply to the lavatory basins. Previously, the offices had been heated by electric fires, hot water being supplied by gas-fired boilers which, after modification, have been retained for summer use.

The financial authority for this scheme was given in May, 1956, with the intention of commencing work on site early in 1957. Since the boiler delivery was 15 months from receipt of approved drawings, the completion date was the end of 1957. However, special efforts were made to obtain the new boiler in view of the urgent need to improve the heating of the shed during the winter of 1956-57.

The repair and overhaul of the existing plant was therefore commenced and this stage was completed before September, 1956. The problem of procuring a suitable boiler was solved, and delivery effected in January, 1957, and, although this entailed its installation in mid-winter, presenting many difficulties, it was decided to try to complete the work ahead of schedule. A serious difficulty was that, due to restricted area available around the Repair Shed, it was necessary to install the new boiler in the existing boiler house, which entailed the total shut-down of the heating services for some weeks whilst the old boiler was removed and foundations laid for the new one. This was overcome by providing a temporary steam supply during the changeover period by using an obsolete locomotive in an adjacent siding.

Very careful co-ordination of the work was necessary to minimise interference to the routine of the depot, and having agreed a site programme of work with the departments and various contractors concerned, constant supervision was maintained over the progress of work at site and the delivery of plant and materials.

The repairs to the plenum heating systems were completed during September, and work was started on the erection of steam and condensate mains for the new unit heaters inside the repair shed. Meanwhile, the building contractors were dismantling and re-erecting the boiler house roof, which had to be raised 4 ft. to accommodate the larger boiler, and forming a catchpit and laying foundations for the fuel oil storage tanks.

At the beginning of January, the locomotive boiler arrived and was temporarily connected to the mains. After

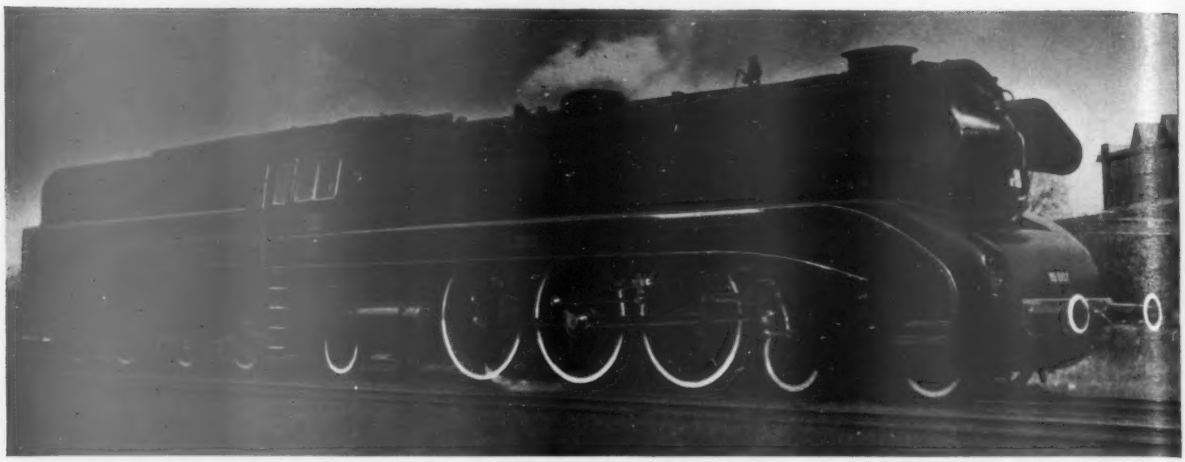
(*Continued on page* 164)

End of repair shed showing doors and disposition of three of the suspended unit heaters

Fuel storage tanks on brick piers installed for oil-fired boiler and heating plant

New German Steam Locomotives

Two prototypes of final design



Three cylinder 190-ton 4-6-2 steam locomotive and tender built by Krupp for the German Federal Railway. Boiler, cab, frame and tender tank frame all completely welded units

RECENTLY, delivery from the Krupp locomotive works at Essen of two prototype three-cylinder 4-6-2 engines is stated to mark the last development of new steam locomotives which will be undertaken for the German Federal Railway. It does not mark the end of new steam locomotive construction, for a batch of Class "23" standard 2-6-2 engines is being built, and construction will not be completed until 1958.

The new Pacifics, Series 10, have been allocated to Bebra depot, and are to work on express duties north of that point to Hamburg, and south thereof to Frankfurt, and to Stuttgart via Würzburg. They have 6-ft. 6-in. coupled wheels. Steam pressure is 255 lb. per sq. in., total evaporative heating surface (fire side) 2,320 sq. ft., and evaporative capacity is considered as 33,000 lb. an hour at a final temperature of 410° C. as a working maximum.

Features of Design

Mechanical and thermal efficiency were rated high in the design desiderata; so was ability to run long periods without much attention. For those reasons roller-bearing axleboxes were fitted throughout and similar bearings incorporated in the connecting and coupling rods; a Heinl feed-water heater was embodied; and other devices such as soot blower, centralised pressure lubrication, flange lubricator, and steam-operated coal pusher also are fitted. Boiler and firebox are entirely welded, and all stays are welded to the shell and firebox.

Experiments on the German Federal Railway during the last 12-18 months with oil firing have resulted in one of the two Series 10 locomotives being fitted for oil burning and one for coal burning. Apart from the bunkers the tenders for both types are the same, with a water capacity of 8,800 gal.; coal capacity of one is 9 tons, and oil capacity of the other 4½ tons. Because of the rapid rise in the price of coal—it has risen by 57 per cent to a cost of DM. 102 on the tender for imported coal during the construction time of these two locomotives—no further construction is to be undertaken, even though operation should prove successful by steam locomotive standards.

Improved Heating Plant at Slade Green Electrical Repair Shed

(*Concluded from page* 163)

testing, the old boiler was dismantled and cut up with welding torches for removal, thus enabling the building contractors to prepare the boiler house for the new plant.

At the same time, the engineering contractors were erecting the new unit heaters in the shed and the plant in the boiler pump room.

Boiler Installation

A fortnight later, the new boiler arrived via rail transport. The limited space available for off-loading made this a difficult operation, and to get the 20-ton, 9-ft. 2-in. dia. × 20-ft. 7-in. long boiler into position, it had to be manœuvred through a passage only 9 ft. 11 in. wide. The next stage of the work, including the erection of all the boiler house auxiliary plant and pipework, was completed within four weeks and testing was begun in the third week of February. Steam was first raised with manual controls of the oil burners on March 17 and the final phase, insulation, painting, and so on were completed nine months ahead of schedule. Subsequently, the final adjustment of the automatic oil burners and control gear was carried out.

The design of the new plant and installation was carried out by Mr. F. E. Campion, Chief Civil Engineer, and the electrical work was executed by Mr. W. J. A. Sykes, Chief Mechanical & Electrical Engineer, British Railways, Southern Region.

ELECTRIC AND DIESEL LOCOMOTIVES REQUIRED BY CHINESE RAILWAYS.—Plans for electrifying a considerable mileage of the Chinese Republic Railways are reported to have resulted in interest being shown in the purchase of electric and also of diesel locomotives from Britain. The electric engines which would be required are stated to be of 4,000 h.p., for working lines converted at a.c. Adequate hydro-electric power is understood to be available, but there is a shortage of equipment and trained technical staff. Adoption of diesel traction is stated to be a longer-term matter, as it depends on development of the Chinese oil industry. A Chinese trade mission is to visit the United Kingdom this autumn, and this is expected to provide an opportunity for discussions with British suppliers of railway material, though several firms have been active for some time in negotiating with the Chinese authorities on contracts for locomotives and other equipment.

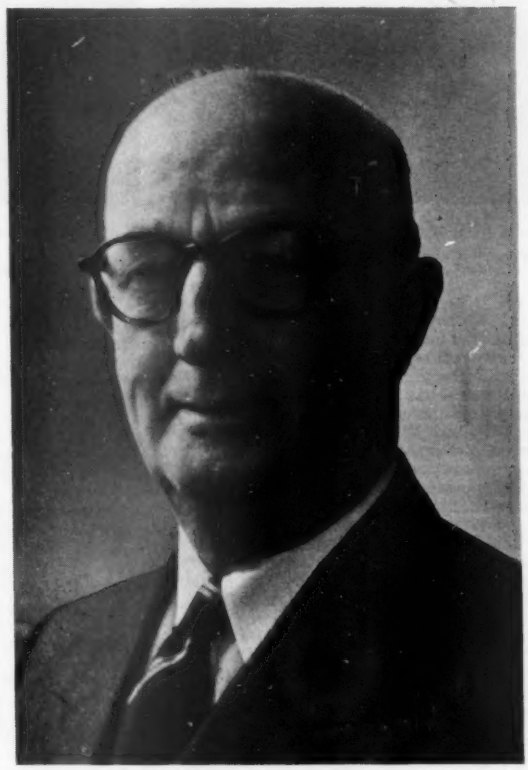
RAILWAY NEWS SECTION

PERSONAL

The following experimental changes have been made in the Burma Railway Board. The Minister for Transport & Communications, the Hon. Boh Min Gaung, has assumed the Chairmanship of the Railway Board in addition to his other duties, and the former Chairman, U Tun Thwin, has been appointed to the re-designated position of Commissioner of Railways. U Kyi Win, the former General Manager, has been appointed Additional Commissioner of Railways, and U Sett Kaing, the former Deputy Commissioner of Railways, has been appointed Controller of Stores.

Mr. J. L. Timewell

Secretary, Victorian Government Railways, who has retired



Mr. P. Farnan

Who has been appointed Secretary, Victorian Government Railways

Mr. J. L. Timewell, Secretary, Victorian Government Railways, Australia, who, as recorded in our June 14 issue, has retired, began his departmental career in February, 1908, as a junior clerk at Melbourne Goods Sheds. He transferred to the Secretary's Branch about three months later, and, for the next 49 years, occupied positions in all sections of the Branch. Among the important appointments he held were: Personal Secretary to Mr. (later Sir) Harold Clapp, Commissioner's Secretary, Chief Clerk, Commissioner's Special Officer, and Commissioner's Representative (Transport Regulation). He became Acting Secretary in November, 1955, the appointment being confirmed a few months later. During the 1914-18 war, Mr. Timewell served overseas with the Australian Flying Corps.

We regret to record the death on July 24, in his 60th year, of Mr. David Strain, A.M.I.Mech.E., M.I.Loco.E., an engineer in the Mechanical Engineering Department of the Crown Agents for Oversea Governments & Administrations. Mr. Strain began his career with the North British Locomotive Co. Ltd. He joined the Crown Agents on September 5, 1921. During his 36 years of service he was concerned with the design of locomotives for various overseas railways, and, in the course of his career, became well-known among the railway engineering companies of this country.

Mr. George Kettlewell, Managing Director of Jonas Woodhead & Sons Ltd., has recently returned from a successful tour of the Union of South Africa.

British Railways, North Eastern Region, have announced the appointment of Mr. M. G. Burrows, Mechanical Engineer, Southern Region, as Chief Mechanical & Electrical Engineer (Designate), North Eastern Region.

Mr. G. H. Hinds, Electronics Advisory Officer, British Transport Commission, has been appointed, at the nomination of the Royal Society, a member of the General Board of the National Physical Laboratory. Mr. Hinds has also accepted an invitation to serve on the Advisory Committee on High Speed Calculating Machines, Department of Scientific & Industrial Research.

Dr. W. R. Lee, Medical Officer, Derby, British Railways, London Midland Region, was successful in the recent examination for the Diploma of Industrial Health of the Society of Apothecaries of London.

Mr. P. Farnan, who, as recorded in our June 14 issue, has been appointed Secretary, Victorian Government Railways, Australia, joined the service in 1910, and is the 17th appointee to the office. His wide staff experience in the rolling stock branch included service in both country and metropolitan areas, while he occupied a senior position of responsibility during the difficult administrative times of the 1930 depression. Since 1937 he has served in the Secretary's Branch in practically all phases of staff work. During the 1939-45 war Mr. Farnan was intimately associated with the involved departmental manpower decisions connected with the release of staff for war service. On two occasions in recent years he organised and directed, overseas recruiting campaigns for the department. He visited the United Kingdom and several countries on the Continent on a recruitment programme.

Mr. George Groome, Purchasing Agent for the Canadian Pacific Railway in London has retired.

Mr. W. M. B. Lamb, Assistant Purchasing Agent, Liverpool, Canadian Pacific Railway, has been appointed Purchasing Agent in London.

Mr. S. J. Judson

Assistant Regional Establishment & Staff Officer, N.E. Region, York

Mr. L. Williams

Appointed District Freight Agent, Liverpool, Canadian National Railways

Mr. J. C. Fielding

Appointed Assistant to European Manager, Canadian National Railways

Mr. Sydney James Judson, Assistant (Wages Staff) to the Regional Establishment & Staff Officer, North Eastern Region, British Railways, who, as recorded in our July 5 issue, has been appointed Assistant Regional Establishment & Staff Officer, North Eastern Region, York, joined the London & North Eastern Railway in 1924. After gaining experience in goods and passenger work in the North East, he was selected for appointment as a Traffic Apprentice, and trained in the Southern Area of the L.N.E.R. He was later given appointments in the Operating Department at London (Ferme Park) in 1933, and in the Commercial Department at Newcastle (1934). In 1941 he was appointed Stationmaster & Locomotive Shed Master at Whitby, in charge of the work of four departments, and from there became Assistant to the Mineral Manager, Doncaster. He was appointed Head of the Works Section of the Commercial Departments in the Headquarters at York in 1944 and was later made Docks & Works Assistant to the Goods Manager and Passenger Manager, York. He became Staff Assistant to the Operating Superintendent and Motive Power Superintendent, York, in 1949 and served on L.N.E.R. Sectional Councils Nos. 1, 2, 3 & 4. Three years later he was appointed Assistant (Wages Staff) to the Regional Staff Officer, the position he now leaves.

Mr. Keith Campbell has been appointed Assistant Manager, Labour Relations, Canadian Pacific Railway.

We regret to record the death on July 29 of Mr. Gordon F. Kent, District Engineer, Liverpool, London Midland Region, British Railways. Mr. Kent was educated at Bracondale School, Norwich, and in 1922 became a pupil under Mr. William Marriott on the Midland & Great Northern Joint Railway at Melton Constable. In 1925 he was appointed a draughtsman in the Divisional Engineer's Office, Crewe, L.M.S.R., and in 1930 was transferred to the Chief Engineer's Office at Euston. He was promoted to be Assistant to the District Engineer, Inverness, in 1934, and in 1941 took up a similar appointment at St. Pancras, where for a time he acted as District Engineer. In 1947 Mr. Kent was appointed District Engineer, Barrow-in-Furness, and, later in the same year, District Engineer, Irvine. He became District Engineer, Leeds, early in 1949, and was appointed District Engineer, Liverpool, in October, 1949.

Mr. L. Williams, Assistant to European Manager, Canadian National Railways, who, as recorded in our July 5 issue, has been appointed District Freight Agent, Liverpool, was born in Liverpool in 1911. He joined the company's service there in August, 1927, as a junior in the Freight & Express Department, and was appointed Chief Clerk in February, 1950. He was promoted to be Freight Traffic Representative in May the following year, and his appointment as Assistant to European Manager in London came in June, 1955.

Mr. P. A. V. Cooper and Mr. T. Kenny have been elected Directors of Dorada Railway Co. Ltd., and Dorada Railway (Ropeway Extension) Limited. Mr. R. P. W. Adeane, Lord Broughshane, Mr. L. H. Watts, Mr. W. N. Green and Mr. R. T. Robinson have resigned.

Mr. Robert S. Coard has retired from the Great Northern Railway Board after 46 years of service. He joined the Railway in Belfast and later served in the Head Offices in Dublin, where he rose to the position of Chief Clerk to the General Manager. In 1943 he became Chief Staff Clerk to the Traffic Department, the position from which he has retired.

Associated British Engineering Limited has announced that Major-General Wilfred George Tryer has been appointed Deputy Chairman of its subsidiary company, the Free Piston Engine Co. Ltd.

Captain F. G. Wayman, Chairman & Managing Director of Rocol Limited, and Mr. George J. Vineall, Director of Research, have left this country for a business visit to the United States.

The appointment has been announced by Canadian National Railways of Mr. John L. Toole, formerly Assistant Comptroller of that system, as Comptroller.

Mr. James C. Fielding, who, as recorded in our July 5 issue, has been appointed Assistant to European Manager in London, Canadian National Railways, was born at Greenwich, London, in 1919 and joined the Company's service in 1935 in the European Manager's Department. He later transferred to the Freight Department and in July, 1955, was appointed City Freight Traffic Representative, the position he now leaves.

We regret to record the death on July 28, at the age of 77, of Mr. E. G. Dyball, Chairman & Managing Director of the Palnut Co. Ltd. His death will be deeply regretted by his co-directors and many friends in the railway sphere.

Mr. J. F. Herbert has been appointed to the newly created post of Manager, Overseas Atomic Projects, with the English Electric Co. Ltd. He has also been elected a Director of the English Electric Export & Trading Company.

Mr. A. H. Parkes, Deputy Chairman & Managing Director of Small & Parkes Limited, has joined the board of the newly formed Railko Limited, a subsidiary of the Birfield Group. Mr. R. G. Walmsley has been appointed director in charge of the Railko factory to be erected at Loudwater.

Mr. H. G. Boullen has been appointed Sales Director of Lancashire Dynamo & Crypto Limited.

The following changes have been announced in the membership of the Council and of the Executive Committee of the Aluminium Development Association:

On the Council, Mr. S. E. Clotworthy, Managing Director of Northern Aluminium Co. Ltd., has succeeded Mr. W. Fraser Bruce as the representative of that Company, and Mr. B. L. Page, a Director of John Dale Limited, has succeeded Mr. J. F. Paige, Managing Director of William Mills Limited, until his recent retirment, as the representative of the aluminium founders organisation, L.M.F.A. Development Limited. The Council appointed to the Executive Committee Mr. R. T. Raven, Works Director of Birmetals Limited, as

the representative of Birmid Industries Limited, in place of Mr. Harold Goodwin who has retired, and Mr. Desmond James, T.I. Aluminium Limited, in place of Mr. W. H. Bowman.

TRANSPORT USERS' CONSULTATIVE COMMITTEE, SOUTH EASTERN AREA

The following have been appointed members of the new Transport Users' Consultative Committee for the South Eastern Area until June 30, 1960.

Chairman:

Mr. Maurice H. Pugh.

Members:

(Representing Agriculture): Messrs. G. E. Cumming, L. G. Mizen, C. T. Miller.

(Representing Industry): Messrs. P. Kelvin-Johnson, W. G. Crowhurst.

(Representing Commerce): Lt.-Col. C. W. Brannon, Mr. R. J. Davie.

(Representing Shipping): Mr. W. Comben Longstaff.*

(Representing Labour): Messrs. J. E. Brown, G. H. Parks.

(Representing Local Authorities): Co. Councillors Col. the Rt. Hon. the Lord Basing, Capt. E. H. Longsdon, R.N.*, Co. Alderman W. K. Martin,* Alderman A. V. Nicholls,* G. M. Radwell.

(Representing the British Transport Commission): Messrs. W. H. F. Mepsted, A. J. Wright.

(Additional Appointments): Mrs. D. Young, Lt.-Col. Sir Mervyn Wheatley.

Secretary:

Mr. C. W. G. Elliff.

* Indicates a new member

INSTITUTION OF CIVIL ENGINEERS

The following elections to the Institution of Civil Engineers have peen announced:

Associate Members

Mr. J. K. Ayles, B.Sc. (Eng.), Grad.I.C.E., Rendal, Palmer & Tritton.

Mr. D. N. Inkson, B.Sc., Sir Alex Gibb & Partners, Ministry of Works, New Zealand.

Mr. L. S. De Silva Jayasooriya, B.Sc. (Eng.), Grad.I.C.E., Civil Engineer's Office, London Midland Region, British Railways.

Mr. V. A. Ross, B.Sc. (Eng.), Grad.I.C.E., Sir Alex Gibbs & Partners.

Graduate

Mr. D. J. Duffy, B.E., Chief Engineer's Office, Nigerian Railway, Lagos, Nigeria.

Mr. S. Williams, Signal Engineer, London Midland Region, British Railways, who is to retire later in the year, was recently presented with a cocktail shaker by members of the Signal & Telecommunications Committee of British Railways. The photograph on this page shows (left to right) standing: Mr. A. W. Woodbridge, Signal Engineer, Western Region, Mr. L. J. Boucher, Signal Engineer, Southern Region, Mr. A. F. Wigram, Signal Engineer, North Eastern Region, Mr. R. A. Green, Signal Engineer, Eastern Region, Mr. R. Dell, Signal Engineer, London Transport Executive, Mr. L. J. M. Knotts, Signal Engineer, Scottish Region; seated: Mr. J. H. Fraser, Chief Signal Engineering Officer, British Transport Commission, Mr. S. Williams, Signal Engineer, London Midland Region, Mr. W. Henley, Secretary, Signal & Telecommunications Committee. Mr. C. C. Inglis, Chief Research Officer, British Transport Commission, who is a member of the Committee, was unable to be present.

Philips Electrical Limited (Industrial Division) has announced the appointment of Mr. J. B. Neesam as Filtration Engineer & representative for the company's North East Region.

Sir Christopher Hinton, Managing Director of the Industrial Group of the Atomic Energy Authority, and a member of the Board of the Authority of Engineering & Production, has been appointed Chairman of the new Central Generating Board. Sir Henry Self, Deputy Chairman of the Central Electricity Authority, has been appointed Chairman of the Electricity Council, the co-ordinating body of the nationalised electricity industry.

Mr. Alex Fraser, Vice-Chairman & Managing Director of Girling Limited, has retired.

Mr. R. J. Ellery has been appointed a Director of Potteries Motor Traction Co. Ltd.

Mr. A. E. Potter, Director of Expandite Limited, has left this country for a tour covering the company's interests in Australia, New Zealand and India.

We regret to record the death, on July 31, of Mr. R. B. White, Technical Representative in the Midlands area for Armstrong Whitworth (Metal Industries) Limited.

Col. C. D. Love, Assistant General Manager, Louisville & Nashville Railroad, has arrived in this country from Canada.

We regret to record the death, on August 5, at the age of 67, of Mr. J. W. Berry, Deputy Managing Director of Birmid Industries Limited, & Joint Managing Director, Birmingham Aluminium Casting (1903) Co. Ltd. The funeral service takes place today at Streetly Methodist Church, followed by cremation at Perry Barr Crematorium.

Mr. W. G. Savory, Project & Sales Engineer, Rotol Limited, has been appointed General Manager of the newly formed Rotol Turbocharger Division.

Mr. Martin D. Whitaker has been appointed Assistant to the Vice-President of Accounting & Finance, Canadian National Railways.

Mr. J. M. Ozanne has joined the Board of the Prince of Wales Dry Dock Co. Swansea Ltd., and its subsidiary, Port Talbot Dry Dock Co. Ltd.

Diesel-Electric Trains in Hampshire

On September 16 the Southern Region of British Railways will introduce diesel-electric trains on certain routes in the Hampshire area, marking another step forward in British Railways modernisation plan.

An hourly semi-fast service will be run with the new trains from Portsmouth to Southampton Central and Salisbury, together with a stopping service each hour between Portsmouth and Southampton. An hourly service will also be operated between Southampton and Winchester City.

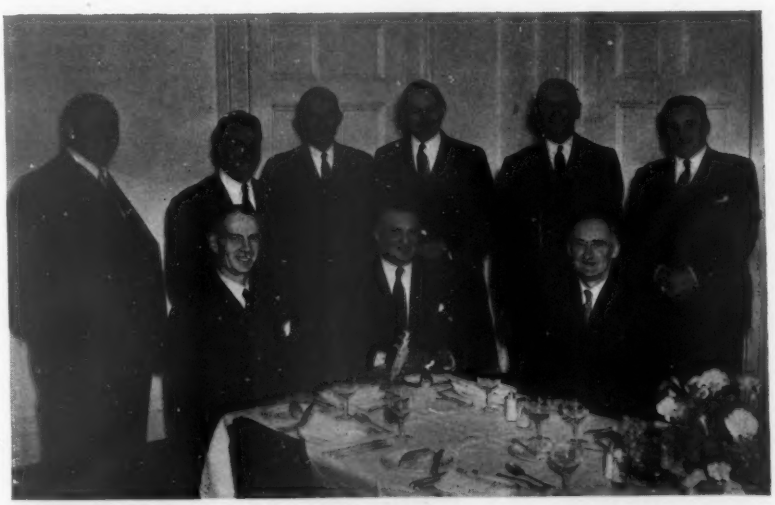
Immediate benefits arising from the introduction of these diesel-electric trains will be the provision of more frequent services, together with a considerable reduction in the journey time compared with that taken by the present steam-hauled trains. The semi-fast run from Portsmouth to Salisbury will be accomplished in 84 min. against the present 105 min., and the Portsmouth-Southampton service will be speeded up to cover the route in 55 min. compared with the existing 70-min. timing. Eleven min. will be saved on the run from Southampton Terminus to Winchester.

Hourly Services

Further diesel-electric services at hourly intervals will be introduced between Southampton Terminus and Alton, and between Portsmouth and Andover Junction, via Botley, immediately the trains are available, which it is hoped will be early in November. The time saving factor on these routes will be even greater, the run to Alton being reduced by 20 min. and that to Andover Junction by as much as 34 min.

Pending the introduction of these trains the present steam service will continue to operate between Southampton Terminus and Alton, but between Portsmouth and Andover Junction the planned hourly service will be operated by steam trains with adjusted running times.

The new trains built at Eastleigh will be of the multiple-unit type and will be formed of two-coach units each consisting of a motor coach and a driving trailer, permitting the driver to operate the train from either end. Each two-coach unit will seat 127 passengers.



Presentation to Mr. S. Williams, Signal Engineer, London Midland Region, British Railways, who is retiring later this year

NEW EQUIPMENT AND PROCESSES

Platform Surfacing Material

A REPAIRING or patching medium, Wearbond, has been specially produced for repairing exterior surfaces which cannot usually be closed to traffic such as station platforms, loading bays, works entrances and so on.

This material for which, it is stated, hacking out or keying is unnecessary, can be laid to any thickness from ½ in. to a feather-edge, to form a tough, resilient, and dustless surface which will stand up to the most heavy usage. It is easily and quickly laid, and treated areas can be opened to traffic immediately the repair is completed.

Wearbond, it is claimed, will adhere firmly to any solid surface such as concrete, asphalt, cobble-stone, and it hardens under wear. It can also be used for filling worn expansion joints in concrete and for correcting levels of exterior concrete surfaces to allow proper drainage.

With this material, specialised labour is not required and patch repairs or complete overlays can be carried out as required. For heavy-duty surfaces the material should be laid from ½ in. to 1 in. consolidated thickness and rolled with a 6-10-ton roller. For light traffic surfaces 10 cwt. to 2½ ton will provide sufficient consolidation. Rollers fitted with sprays are preferable but failing this, the wheels should be kept damp during rolling.

Further details may be obtained from the manufacturer, British Bitumen Emulsions Limited, Dundee Road, Trading Estate, Slough, Bucks.

Grinding Wheel Radius Fixture

AN addition to the range of Endia wheel-forming equipment is the Link Radius Fixture, model LRF. 430, for dressing radii of grinding wheels. This is of application for wheels for machine or tool shop operations when a component having a radius must be ground or have radii which are machined by a ground form tool.

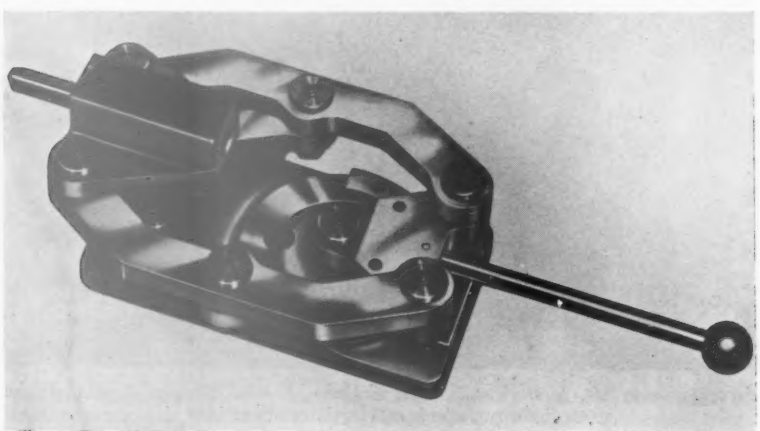
A patented feature of this device is the use of three base pivoting members, giving rigidity in all positions of operation. As is seen from the illustration, two side links act as connecting rods between the three pivoting members which are attached to the base, and these two links carry a diamond tool support at the end. An operating handle is fitted to the triangular pivoting member, and any radial movement of this is carried through to the diamond support by the side links.

All pivots and bearings are hardened and ground, and provision is made for lubrication of each point. A built-in protractor and adjustable stops permit rapid selection and limitation of diamond travel to the required arc, and the radius produced is governed by slip gauge setting from a datum face on the diamond support.

The device is universal in application in that there is no limitation of diameter of grinding wheel which may be dressed and the fixture can be attached to suitable bases for any type of machine. One edge of the base is accurately machined relative to the protractor zero to allow simple alignment of the fixture on the machine.

The LRF. 430 model has a capacity of 0-1½-in. radius, concave and convex. Dimensions of the fixture are, height to diamond, 3⅛ in.; size of base 4 in. x 7½ in.

Further details are available from the manufacturer, Engineering Diamonds, Limited, 26, Warwick Row, Coventry.



Ultrasonic Cleaning Machines

A LOW-FREQUENCY ultrasonic cleaning unit, recently developed, is thought to be one of the first of its size and type to be manufactured in this country. It has applications for cleaning more intricate railway equipment, such as diesel injectors, oil pumps, and mechanical parts of electrical equipment.

The machine is of the cabinet type which works in conjunction with a Mullard 2-kW. low frequency generator operating at a frequency of 20 kcs. It has a transducer area of 360 sq. in. and a tank volume measuring 30 in. long × 27 in. wide × 15 in. deep.

A continuously circulating pump draws the liquid from the tank, passes it through fine filters, and returns it in a clean state. The temperature is maintained at the maximum figure and controlled by thermostatic controlling equipment. The inside of the tank is lined with Epikote to give a clean interior finish and to protect the tank against the action of any cleaning liquids which may be applied.

The manufacturers, Dawson Bros. Ltd., Ventnor Works, Gomersal, Nr. Leeds, is prepared to make full tests as to the best type of equipment to suit the customers' particular requirements.

Hopper Flow Stoppage Prevention

PULSATING panels, designed to overcome problems of bridging of difficult materials in hoppers, bunkers and similar equipment, have been developed with the trade name PneuBin. Materials which have been handled include moulding sand, iron pyrites and coal.

The PneuBin unit consists of steel-backed, neoprene, pulsating panels mounted on the inside wall of existing or new bins or hoppers, with air controls to regulate the action of the panels. By inflation and deflation of the panels, the contents of the hopper are positively displaced ensuring free flow of the material. After the panels have deflated, the air control unit which can operate from the regular air supply of the plant, commences another cycle, the process continuing automatically; the frequency of the air controller is adjustable.

The neoprene panels are available in 14 different sizes ranging from 4 in. × 12 in. to 24 in × 72 in. Each panel consists of a steel plate with neoprene adhered all round the back of the plate, with a non-adhered neoprene surface on the face side of the panel. Standard nut mounting bushings and an air inlet coupling are fitted to the rear of the panel.

Controls to actuate the various panels are available in three sizes, the basic difference in the two smaller controls being the air capacity. The type required depends on the size of panel being used and the number of bins in an installation. One control can actuate panels in several different bins, if required. The largest control available incorporates flexibility of panel action in that the panels can be operated in unison or in sequence.

PneuBin can be used in various basic bin designs, such as pyramidal, conical, V-shape, and catenary, manufactured of steel, wood, or concrete.

Details may be obtained from the sole concessionaires for the U.K., Paterson Hughes Engineering Co. Ltd., Bedford House, Bedford Street, W.C.2.

Netherlands Railways in 1956

The report for 1956 of the Board of Management of the Netherlands Railways shows that although increased rates and fares were operative throughout that period the rise in wages and material costs resulted in the general position remaining very much the same as at the close of the preceding year. The final net gain on profit and loss account amounted to fl. 10,354,424 against fl. 10,604,117 in 1955. It is proposed to distribute fl. 9,000,000 as 3 per cent dividend and carry forward the balance. Total receipts came to fl. 488,222,151, against fl. 454,926,093 in the previous year but costs rose from some fl. 443·3 millions to fl. 477·9, actual operating charges being about fl. 27·1 millions higher than before; depreciation also was somewhat greater by fl. 6 millions, amounting to fl. 73,303,103. Once again fl. 4,000,000 have been set aside in connection with the programme for eliminating level crossings. Some fl. 60·8 millions were borrowed under long term conditions in connection with the extensions and modernisation plan being actively pushed forward. Additional electrification was undertaken and several station layouts improved, and new rolling stock obtained, resulting in the last wooden bodied passenger vehicles being abandoned and the Netherlands Railways becoming the first Continental railway system to operate steel stock exclusively. More electric and diesel locomotives went into service.

The traffic carried by certain subsidiary undertakings, principally bus services, increased, and despite rising costs the results for the year were on the whole satisfactory. Passengers carried by the railway rose from 184,500,000 to 189,000,000 and passenger-km. from 7,573 millions to 7,687, but average length of journey fell slightly. Once again there was a decline in the use of the higher classes of carriage and during the year of course the two-class system was generalised. The level of international traffic remained fairly stationary as regards numbers of journeys but passenger-km. declined somewhat, attributed chiefly to the lessened demand on the part of the British authorities for through military leave facilities, while business and holiday traffic increased, the former appreciably.

The growth of freight traffic witnessed in 1955 continued to be noticeable with 3·5 per cent increase in total load carried to 26·5 million *tonnes*, while *tonne*-km., exclusive of parcels and small consignment traffic, was greater by a similar percentage. Improvement was more appreciable in international than in internal traffic. Much more coal was brought into the country by ship than before. Export traffic was greatest to Germany, with Belgium and Luxembourg second, and France third, followed by Austria, Switzerland, Italy and Czechoslovakia. Despite improved working and retirement conditions it proved less easy to attract new entrants to the service; total staff employed fell from 34,667 to 33,521 in the twelve months.

Electrification

The extension of electrification between Eindhoven and Venlo and Gouda and Alphen aan de Rijn enabled improved hourly interval services to be introduced and a direct through connection established from Amsterdam, Rotterdam and The Hague to Venlo over this route. The new Sloterdijk station at Amsterdam was opened and some of the half-hourly trains to Rotterdam now call there, with those to Zandvoort and Uitgeest and Alkmaar via Haarlem. Expresses between Amsterdam and Maastricht now call at s'Hertogenbosch. Numerous other improvements in inland services were introduced and international services were similarly dealt with. Connections to Germany, Switzerland and beyond have been appreciably accelerated by the wider use of diesel equipment. Total route mileage open at the close of 1956 is given as a little over 2,000, of which some 876 were electrified and 460 used by freight trains only. There are 1,036 miles of single line.

Station Reconstruction

Work on the new station at Eindhoven, involving extensive local engineering works, was finally completed and much other station reconstruction carried out, while automatic colour-light signalling was installed between Rotterdam, Roosendaal and Woensdrecht, The Hague and Leiduin, and Eindhoven and Blerick, bringing the total of route worked in this manner to 317 miles at the close of the year. Panel type interlocking was installed at Leiden and Dordrecht and eight other places. Sixteen public and 13 occupation type crossings were abolished as a consequence of road re-alignments and provision of bridges, and a number of flashing light and half-barrier installations applied at other locations, either fully or partially automatic in operation, with a few half-barriers manually actuated. Flashing lights also were introduced at certain attended crossings and improved floodlighting at some 170 locations.

Two W.R. Tank Engines Transferred to L.T.E.

The London Transport Executive has recently acquired, from the Western Region, two steam locomotives to replace a pair of ex-Metropolitan "F" class engines, Nos. L.49 and L.51, which were built 56 years ago and have now become due for extensive repairs. These two replacements are Western Region "5700" class 0-6-0 pannier tank locomotives Nos. 7711 and 5752; they have been renumbered L.90 and L.91 respectively.

Altogether 11 steam locomotives are in service on London Transport engaged on miscellaneous duties, such as the hauling of engineers' works trains after traffic hours over the District and Metropolitan lines. Apart from the newly-acquired stock, they range from L.44, built in 1896, to L.30 and L.31, which entered service on the District Railway in 1931.

Since the formation of the London Passenger Transport Board in 1933, all major maintenance work on steam locomotives has been performed at Lillie Bridge Depot. Some have been refitted extensively and from time to time costly boiler and fire-box replacements have been carried out. When several of the locomotives recently became due for renovation, London Transport felt that their considerable age made it necessary to investigate the possibilities of alternative forms of motive power.

Alternative Motive Power Units

The service requirements are complex and might appear to offer favourable conditions for the employment of diesel locomotives, but, because of the small number of hours during which the locomotives are required to work in a week, London Transport states that the use of diesels would not be an economic proposition. The possibilities of battery-powered locomotives were also considered as London Transport already has a number of them in service on similar duties, mainly on Tube lines, but to obtain the equivalent tractive effort produced by a steam locomotive it would be necessary to use two battery locomotives in tandem. Even with a pair of battery locomotives, however, the same speeds could not be achieved.

After trials it was decided that the most suitable replacement would be steam locomotives of the type which have been subsequently acquired. The two tank engines have now been repainted in London Transport livery and have been put into service in place of L.51 and L.49.

One of two former Western Region "5700" class tank locomotives acquired by London Transport

L.A.M.A. Exhibits at Scout World Jamboree

The Locomotive & Allied Manufacturers' Association has a stand at the Industrial Pavilion which forms part of the Boy Scouts World Jamboree at Sutton Coldfield being held on August 1 to 12.

The stand features 16 model locomotives including four working models and a photographic display illustrating the tradition and products of the locomotive industry from the days of *Locomotion No. 1* and the *Rocket* up to modern times.

The models displayed are as follows:—

W. G. Bagnall Limited: 12-in. × 18-in. cylinder, saddle tank steam shunting locomotive for operation on 4 ft. 8½ in. gauge, with tractive effort at 85 per cent boiler pressure of 10,682 lb.; weight in working order 20·5 tons.

Beyer, Peacock & Co. Ltd.: Beyer-Garratt Class "57" 4-8-4 + 4-8-4 locomotive for East African Railways & Harbours.

English Electric Co. Ltd.: (*a*) 3,600-h.p. electric locomotive for R.E.N.F.E., built in conjunction with the Vulcan Foundry Limited; (*b*) Deltic diesel-electric locomotive; (*c*) British Railways 1,750-h.p. diesel-electric locomotive No. 10201.

Hunslet Engine Co. Ltd.:

(*a*) Three Hunslet models are shown running on a small display unit, the models being of: (1) "Austerity" steam locomotive, a 0-6-0 shunter weighing 48 tons designed by the Hunslet Engine Co. Ltd., and built by many firms during the late war; (2) 500-h.p. 0-8-0 4 ft. 8½ in. gauge diesel-mechanical locomotive weighing 55 tons in working order, capable of starting and hauling a maximum of 1,650 tons in low gear; (3) 100-h.p. 0-6-0 diesel-mechanical mines type locomotive, fully flameproof for operation below ground;

(*b*) Another Hunslet exhibit is a model of a 21-h.p. diesel locomotive for narrow-gauge railways, particularly useful to contractors and for quarry working.

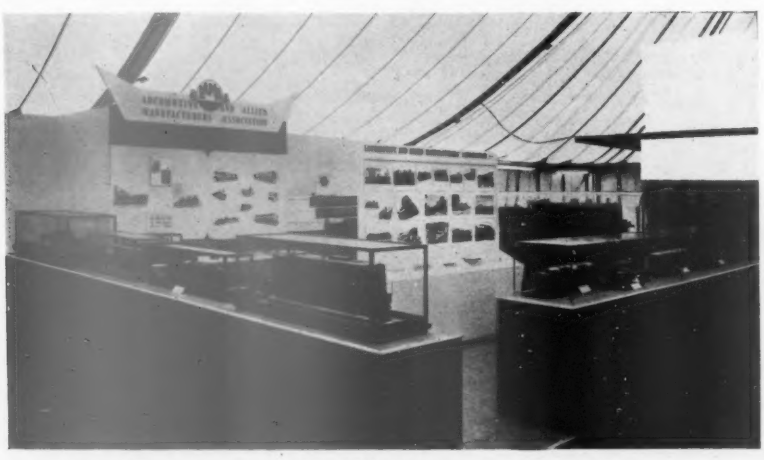
Metropolitan-Vickers Electrical Co. Ltd.: (*a*) 3,000-h.p. gas-turbine electric locomotive operating on British Railways, Western Region; (*b*) 50-ton 1,080-h.p. electric locomotive for Rede Mineira de Viacao, Brazil, with maximum tractive effort 27,500 lb.

North British Locomotive Co. Ltd.: (*a*) Working model of S.N.C.F. 4-6-2 compound steam locomotive, one of a batch of 45 supplied in 1914 by North British, weighing 147 tons in working order and with tractive effort of 20,760 lb.; many have been modernised and still work principal expresses of French National Railways; (*b*) model of a 625-h.p. diesel-hydraulic Bo-Bo Locomotive, 20 of which have been supplied to the Western Railway of India for operation over sandy terrain; maximum speed of 55 m.p.h. and weight 42 tons in working order.

Ruston & Hornsby Limited: Model of 315-h.p. diesel shunting locomotive.

Vulcan Foundry Limited: "WM" class 5 ft. 6 in. gauge 2-6-4 tank locomotive for Indian Government Railways displayed mounted on a diesel-hauled road transporter, this type of vehicle being used for carrying locomotives to the docks; locomotive weighs 96½ tons in working order and has a tractive effort at 85 per cent boiler pressure of 19,100 lb.

Yorkshire Engine Co. Ltd.: 400-h.p. 4 ft. 8½ in. gauge diesel-electric shunting locomotive powered by a Rolls-Royce engine and B.T.H. electrical equipment.



Part of the Locomotive & Allied Manufacturers' display at the Boy Scouts World Jamboree

Santos Jundiahy Railroad in 1955-56

The Annual Report of the Santos Jundiahy Railroad shows that between 1955 and 1956 the number of passengers carried increased by 9·9 per cent to 60,275,000, and freight movement by 23 per cent to 10,054,463 tons. With only 83·4 miles of double track, this line, formerly the Sao Paulo Railway, connects the port of Santos to the city of Sao Paulo, the State railway system and the Minas Gerais, Mato Grosso and Goias areas. It operates the Santos-Sao Paulo pipe-line, carrying crude petroleum to government and private refiniries and distributing refined products directly to the oil companies and, in tank wagons, to consumers in five states; 86·6 per cent of the imports landed at Santos and 55·5 per cent of the exports shipped through that port were handled by the Santos-Jundiahy Railway in 1956.

Electric traction hauled 64·4 per cent of freight trains in 1956, diesel traction 30·8 per cent, and steam 4·8 per cent. The corresponding figures in 1950 were 18·5, 27·9 and 53·6 per cent. Diesel traction was introduced by the former British administration with the purchase of four 1,000-h.p. Alco locomotives. The number has since been raised to 12, which handle approximately 35 per cent of the entire traffic. An additional 45 diesel-electric locomotives were acquired in 1956 with the Export-Import Bank's $25 million loan and will enable steam traction to be entirely suppressed.

The electrified system, inaugurated in 1950 on the Jundiahy-Pari section and extended later to S. Andre and Maua, carries 65 per cent of the traffic on the principal lines with 16 3,000-h.p. locomotives. The overhead system is now being carried to Piracicaba and the new section will be fed by a 4,000-kVA substation, under construction at Maua.

Improvements to the inclined planes, including the installation of automatic boilers, have cut out frequent stoppages for re-fuelling and raised carrying capacity over the mountain section from 2,200,000 to 6,000,000 tons net annually. They have resulted in a 25 per cent reduction in the number of staff employed and a 50 per cent economy in fuel consumption because of the use of oil instead of coal. Alterations to the haulage system have increased the useful life of the cables by 50 per cent and that of the pulleys, axles, and so on, four times. The standardisation of brakes and couplings and the replacement of wooden wagons by 900 all-steel wagons has enabled the company to run heavier and faster trains.

The permanent way is being strengthened throughout; 126-lb. rails, electrically soldered in lengths of 262 yd., are being laid, the number of sleepers per mile has been increased to 2,993 and a minimum thickness of 12 in. of stone ballast is provided beneath the sleepers. The company's workshops are now building stainless steel wagons for electrified lines.

COMMEMORATING ROYAL VOYAGE IN BRITISH RAILWAYS LAKE STEAMER.—During a visit to the Lake District last year the Queen and the Duke of Edinburgh were passengers in the Lake Windermere steamer *Teal*. To commemorate the event a plaque was recently unveiled in the vessel by Mrs. Reed, accompanied by her husband, Captain J. D. Reed, Manager of British Railways Irish Shipping Services. Above the plaque is a signed portrait of the Queen and the Duke of Edinburgh.

BRITISH RAILWAYS (WESTERN REGION) LONDON LECTURE & DEBATING SOCIETY.—The first meeting of the 1957-1958 Session of the Western Region London Lecture & Debating Society will be held on October 3, at the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m., when Mr. Arthur Chamberlain, Member of the Western Area Board of the British Transport Commission, will give a paper entitled "The railways and railwaymen as seen by industry." In addition to this paper the programme for the session includes addresses by Mr. C. Eade, Associated Newspapers Limited; Mr. G. J. H. Jeffs, Commandant, London Airport, and Mr. C. Holt, Thomas Cook & Son Limited, and papers on the "Western Region track testing car," "Railway signalling," "A visit to the U.S.A.," "Railway salesmanship," and "Work study." Also young men under 35 years of age will be invited to discuss the motion "The means by which British Railways can be made to pay their way," and prizes of two guineas and one guinea will be awarded for the two best contributions.

Questions in Parliament

Railway Freight Traffic

Lord Forbes, in the House of Lords on July 24, asked the Government whether (1) British Railways were (a) carrying more or less freight now compared with just prior to fuel rationing; (b) intending to adopt the Dutch D.A.F. container or any other method for moving freight by rail and road; and (2) the Government was satisfied that British Railways were taking the necessary steps to encourage greater movement of freight by rail.

Lord Mancroft, Minister without Portfolio: British Railways are now carrying less freight than they were immediately before fuel rationing was introduced on December 17 last, but only slightly less than they were carrying at this time a year ago. Having regard to the general downward trend in freight traffic, and particularly merchandise traffic, last year the figures suggest that some traffic which was transferred to the railways during fuel rationing has been retained.

The Dutch container device has now been studied in all Regions, and British Railways have built a prototype, on similar principles but to a different design. This device is, however, comparatively expensive, and although it may show the way towards a more effective method of transferring containers between road and rail vehicles, British Railways are at present inclined towards the development of the simpler types of transferable containers of improved payload adapted for different traffics. Inquiries for suitable lifting apparatus for these large containers have gone to the trade.

The B.T.C. fully realises that it is vitally important to British Railways to reverse the present decline in railway freight traffic, and to develop the traffics for which the railways are best suited. The improvements in rolling stock, marshalling yards and terminals, which are necessary to give speedy, reliable, and competitive services, will take time to introduce, but the programme is well up to schedule. In the meantime, British Railways are, by such measures as the more effective use of staff and equipment, the development of special facilities like the Export Express Service, and the adoption of a fully commercial charging policy, doing their utmost to increase the attraction of their services.

Lord Lucas of Chilworth: It cannot be disguised that British Railways are losing freight, and this is entirely due to the actions of the Government in "messing about" with a very fine transport system instituted by the late Government.

Lord Mancroft: If Lord Lucas of Chilworth expects me to agree with that, he would expect me to agree to anything.

Revised Cost of Railway Modernisation

Lord Lucas of Chilworth asked the Government in the House of Lords on July 29 to state the estimated cost of the railway modernisation plan, based upon current money values, costs, and prices.

Lord Fairfax of Cameron, Lord-in-Waiting: I regret that I cannot add to the answer given by Lord Mancroft on July 23. As he then said, the B.T.C. is now making a reassessment of the cost of the modernisation programme, and no figures are yet available.

Lord Lucas: Am I to understand that the Commission has no budgetary control audit to check the cost progress of the railways modernisation scheme which, so far as one can understand, was based on 1954 value, costs, and prices? Last June the Commission announced that one-third of this £1,200 million scheme was either in progress or had been authorised; and, further, whether that was based upon 1954 costs and prices, or upon current prices, or whether it was authorised with no costing knowledge at all?

Lord Fairfax: This is a big, important, and intricate question, to which, as Lord Mancroft said last week, not all the normal business practices would apply. In some ways it is different from ordinary business questions. It is true that the scheme is well ahead of schedule, but I am afraid that I am not able to tell the noble Lord upon what the work already done is based.

Lord Lucas then pointed out that it was upon those facts and figures that the Minister of Transport had persuaded Parliament to undertake the whole cost of the railways modernisation scheme. All he asked was whether the Commission followed the common practice of all industry: that was, to have a very close budgetary control on the cost of all developments in the inflationary period in which we live.

Lord Fairfax: It is the responsibility of the Commission to balance its accounts; I should say, to break even by 1961-62; and that duty is in no way affected.

Lord Lucas: May I ask whether we are to go on as we are, and no cost investigation is to take place, day by day, week by week, and year by year? If so, the liability which the State will have to meet in 1965 will soar far above any of the figures that have been given to Parliament.

Lord Fairfax: I can only say that the re-assessment is in progress, and I am afraid that I cannot add to that reply.

Smoking in Sleeping Cars

Lord Forbes asked the Government in the House of Lords on July 31 if the B.T.C. would prohibit smoking in all railway sleeping cars with two or more berths.

Lord Mancroft, Minister without Portfolio: The Commission does not think there is any need to control smoking in sleeping compartments by regulation. Twin-berth sleeping compartments are mostly used by people travelling together; in four-berth compartments, experience has shown that the question of smoking can usually be left to the good sense and manners of the occupants.

Railways and Motor Roads

Viscount Monsell asked the Government in the House of Lords on July 29 whether, in view of the ever-increasing cost of transport on British railways, the time had come when it would be advantageous to turn some railway tracks into motor roads.

Lord Mancroft, Minister without Portfolio: In the Government view the railway will, for as long as can be foreseen, continue to be an essential part of the national transport system. It is the policy of the railways, which has the support of the Government, to concentrate on the traffics for which they are best suited, and to offer by such measures as the modernisation and rationalisation of their system, the adoption of a more flexible charging policy, and increased productivity, an efficient and fully competitive railway service. Where the process of rationalisation calls for the closure of a railway line, the Government are always ready to consider, in conjunction with the Commission and the appropriate highway authority, the possibility of converting the track into a highway, but the cost of such conversion would generally be considerable, because of different requirements of width and headroom, and might not be economic in relation to the probable traffic value of the road.

Attracting Staff to the B.T.C.

Dame Irene Ward (Tynemouth—C.) asked the Minister of Transport & Civil Aviation on July 24 whether he was satisfied that the structure of the B.T.C., which enabled the board to engage highly-paid staff, reconstruct policy, and so on, and dismiss staff, even with compensation, was fitted to attract first class men to the Commission; and if he would make a statement.

Mr. Watkinson, in a written reply: The recent increases in the salaries of Chairmen and Members of the boards of nationalised industries should help the Commission to offer the salaries necessary to ensure that they have the services of first-class men.

Main-Line Electrification

Mr. Kenneth Robinson (St. Pancras N.—Lab.) asked the Minister of Transport & Civil Aviation on July 24 if he would now detail the programme approved by him of electrification of the Euston-Liverpool-Manchester main line, giving the estimated dates of completion of each section.

Mr. Watkinson, in a written reply: There is little I can add to the information I have already given. Electrification of the line is starting in the north, and working southwards, and although the plan is up to schedule, there is nothing at present to suggest that the whole line to Euston will be finished before 1967.

London Airport Rail Link

Mr. A. E. Hunter (Feltham—Lab.) asked the Minister of Transport and Civil Aviation on July 24 whether he was yet in a position to make a statement, regarding the proposed railway link from central London to the London Airport.

Mr. Airey Neave, Parliamentary Secretary, in a written reply: No. My right hon. friend and I are still considering this matter with the Chairmen of the B.T.C. and the Airways Corporations.

Fares and Freight Rates

Sir David Robertson (Caithness & Sutherland—U.) asked the Minister of Transport & Civil Aviation on July 24 if he was aware that under nationalisation the old companies' method of charging railway fares and freight rates at so much per passenger mile and per ton mile gave rise to anomalies; and if he would give a general direction to the B.T.C. to put in hand an immediate inquiry into the possibility of adopting an alternative method.

Mr. Watkinson: The relationship of railway charges to costs raises very complex issues which engage the attention of the Commission, and which have been examined at length in the Court of the Transport Tribunal.

Mr. Hector Hughes (Aberdeen N.—Lab.): In considering the alternative propositions before him, will the Minister reconsider the present arrangement with regard to tapering rates to ensure that the North East end of this island is treated as fairly as the rest of the island?

Mr. Watkinson: This is a most complicated matter. I will write as soon as I can.

Sir D. Robertson asked the Minister also if he would give a general direction to the Commission to postpone application of the latest increase of 10 per cent on freight rates until October 1.

Mr. Watkinson: No. I should not be justified to interfering with the measure of discretion now granted to the Commission,

to treat freight charges on a sound commercial basis in relation to costs.

Sir D. Robertson: In view of the very serious consequences to the nation as a whole, and to British Railways, because of the traffic it will lose, it would be a good plan to get a small investigating team of business men and accountants to look at the earnings and the losses.

Mr. Watkinson: Any increases on British Railways now are related to the new charges scheme, which allows them to negotiate, if necessary, a figure below the permitted increase, and therefore my advice is that interests who feel that more business could be secured by not increasing these charges should make their case to the Commission.

Merthyr Tydfil-Abergavenny Branch

Mr. S. C. Davies (Merthyr Tydfil—Lab.) raised on the adjournment on July 25 "the threat" to close down completely the Merthyr Tydfil-Abergavenny railway, which, he said, had caused consternation, and was strongly opposed by the local authorities. The matter had been referred to the Transport Users' Consultative Committee, but he was not inhibited in any way by that fact, for the reason that this Committee was a party, not long ago, to the closing down, against all public interests, of a most important railway entirely within his constituency. The reason given by the B.T.C. for this latest attempt was that the losses on this railway amounted to about £59,000.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, pointed out that the matter was before the Transport Users' Consultative Committee for Wales & Monmouth, which was acting as the investigator appointed by Parliament under the 1947 Act.

"It is the policy of the Commission," he explained, "to maintain branch lines in the rural areas as far as possible; but one must remember that these lines were laid 100 years ago before the advent of the motor car, and in very different circumstances from those which exist today."

There was a limit to what could be done with diesel cars. It was not always possible by their use to turn a large loss even into a bearable loss. Taking one year with another, there was a duty imposed by Parliament to make the Commission pay.

"We have assisted it to engage in a great modernisation plan," added Mr. Nugent, "and in that context the Commission will certainly keep in use every branch line that it possibly can. I know the spirit of the men, particularly in this section. I was with them in South Wales not very long ago, and I am certain they are concerned to give the best service that they can to the local people."

Gloucester Road Air Terminal

Mr. R. Gresham Cooke (Twickenham—C.) asked the Minister of Transport & Civil Aviation on July 31, in view of the fact there was to be no underground station under the new British European Airways terminal building at Cromwell Road, what steps were being taken to ensure an easy and direct access to this new building from the west end of Gloucester Road Station.

Mr. Airey Neave, Joint Parliamentary Secretary, in a written reply: The question of providing direct access at the west end of Gloucester Road Station is a matter for the London Transport Executive. It would involve it in heavy expenditure which it would consider only if it became clear that there was a real need for the facility.

Mr. John Rankin (Govan—Lab.) asked the Minister of Transport & Civil Aviation on July 31 if he would make a further statement on the facilities to be offered to air passengers joining or leaving British European Airways coaches at the new terminal in Cromwell Road.

Mr. Airey Neave, in a written reply: If the hon. Member is referring to transport between Gloucester Road Station and the Air Terminal, a distance of about 400 yd., I understand that the L.T.E. and Air Terminals Limited are considering various means of assisting passengers in transit if any substantial demand arises.

Argentine Railways' British Pensioners

Captain H. B. Kerby (Arundel & Shoreham—C.) asked the Foreign Secretary on July 29 what steps he had taken, and was taking, to protect the interests of some 400 British subjects, whose average age was 69 years—members of the British Association of Argentine Railway Pensioners—whose pensions had been more than halved by the application of the free market rate of exchange by the Argentine Government; and if he would make a statement.

Mr. W. D. Ormsby-Gore, Minister of State for Foreign Affairs, replied, in writing:

Prior to October, 1955, the Argentine Government remitted pensions to British pensioners of the Argentine railways at a fixed exchange rate of approximately 39 pesos to the £. In October, 1955, the Argentine Government devalued its currency and established two new rates of exchange, an official rate of 50·40 pesos to the £ and a fluctuating "free market" rate.

Although it had originally decided that all pensions were to be remitted at the "free market" rate, the Argentine Government, as a result of representations made by the British Government, authorised, in April, 1956, the remission of pensions to British pensioners of the Argentine railways at the official rate of exchange for the period March to December, 1956.

In December, 1956, the British Government urged the Argentine Government to permit the official rate to be applied to the remission of pensions during 1957. Despite repeated reminders both in Buenos Ayres and in London, the Argentine Government has as yet made no official reply.

The Government will continue to do all it reasonably can to ensure that an equitable solution to this problem is reached.

Investment in Nationalised Industries

Captain Pilkington (Poole—C.) asked the Chancellor of the Exchequer on July 25 what was the percentage of present investment in the road programme as compared with that in electricity, coal, and railways, respectively.

Mr. E. Powell, Financial Secretary to the Treasury: The figures for 1956 are as follows:—

–	£ million	Per cent
Total gross fixed investment..	3,139	100
Road Transport		
Roads & public lighting ..	29	0·9
Road vehicles:		
Public passenger vehicles	19	0·6
Goods vehicles	144	4·6
Cars*	122	3·9
Total vehicles	285	9·1
Railways		
Rolling stock	65	2·1
Other	27	0·8
Total railways† ..	92	2·9
Electricity†	247	7·9
Coal mining†	84	2·7

* Business expenditure only
† Includes small amounts for road vehicles

Poster Display Units in East Africa

One of the new units combining seating accommodation and poster sites, installed by East African Railways & Harbours at certain main stations. The unit can be fitted with a roof section if required

Contracts and Tenders

Railway equipment required for Portuguese East Africa, Australia, India, and South Africa

British Railways, North Eastern Region, have placed the following contracts:—

J. H. Eblett, Lemington, Newcastle: cleaning and painting. Blyth & Tyne Branch, Hepscott to Newsham Stations inclusive, Newbiggin Branch, Newbiggin to Bedlington exclusive, and Blyth & Tyne Branch, Seghill to Hartley inclusive, Backworth to Morpeth exclusive

F. & J. Watkinson, Bradford: erection of new signalbox, Huddersfield

Herbert Morris Limited, Loughborough: workshop hoisting facilities, Thornaby Motive Power Depot

Crompton Parkinson Limited, Chelmsford: provision and installation of E.H.V. & M.V. cables, Thornaby Motive Power Depot

Towler Bros. (Patents) Limited, Rodley, Leeds: conversion of hydraulic power for machines, Darlington Locomotive Works

C. R. Price, Doncaster: reconstruction of station roofs, Sowerby Bridge

Ridghouse Limited, Aycliffe Trading Estate, Near Darlington: fabrication of steelwork for gantries for Signal Engineer.

British Railways, Southern Region, have placed the following contracts:—

J. W. Ellingham Limited, Dartford, Kent: improvements, Bromley South Station

James Longley & Co. Ltd., Crawley, Sussex: alterations and improvements, London Bridge Regional Medical Officer's accommodation

G. N. Haden & Sons Ltd., London, W.C.1: installation of central heating, hot and cold water services, ventilation and air-conditioning, London Bridge Regional Medical Officer's accommodation

F. & E. Eastman (England) Limited, London, S.E.15: wall tiling, subway and staircase, Kew Gardens Station

James Robb & Son Ltd., London, S.E.3: renovations, Selhurst Carriage Cleaning Shed

Winter & King Limited, London, S.W.20: renovations, Norbiton Station

Maurice Hill Limited, Horndean, Hants: renovations, Ryde St. Johns, Ryde Esplanade, and Sandown Stations, Isle of Wight

Leonard Fairclough Limited, London, N.W.5: reconstruction, Elephant & Castle, bridge over Penrose Street

P. & M. Contractors Limited, London, S.W.1: renovations at various stations, Purley district

Taylor Woodrow Construction Limited, Southall, Middlesex: widening of the line, Sittingbourne to Swale Halt

McCartney & Sons, London, S.W.9: renewal of roof glazing, Waterloo Station

Mussellwhite & Son Limited, Basingstoke, Hants: new signals depot, Winchfield Signal Engineer's Department

Fredk. Hayden Limited, Tunbridge Wells, Kent: installation of central heating and hot water services, Staplehurst

Hoad & Taylor Limited, Horsham, Sussex: relay house, Gatwick Racecourse Station

R. Corben & Son Limited, Maidstone, Kent: alterations to telephone exchange and new police office, Tonbridge

G. Bainbridge & Son Limited, Eastbourne, Sussex: foundation work and drainage, Polegate

G. N. Haden & Sons Limited, London, W.C.1: steam and condensate mains, Eastleigh Carriage & Wagon Works

Deeds (Builders) Limited, Hounslow, Middlesex: renovations, Nine Elms "B" Goods Shed

W. H. Gaze & Sons Limited, London, S.W.15: resurfacing and surface dressing of roads, Woking district

C. & T. Painters Limited, London, N.W.10: renovations, Eastleigh Station

W. R. Payne & Sons, Shipley, Yorks: renovations, Frant Station

R. Robinson & Co. (Contractors) Ltd., London, S.W.1: construction of retaining wall, Balham-Streatham Hill

Mauld & Blaydon Limited, Ewell, Surrey: installation of central heating and hot water services, West Wickham Station.

The Special Register Information Service Export Services Branch, Board of Trade, has received a call from Portuguese East Africa for one self-contained breakdown truck.

The issuing authority is the Ports, Railways & Transport Department, Lourenço Marques. The tender No. is 140/57. A provisional deposit of Esc. 25,000 must be made. The closing date is August 27, 1957. A copy of the tender documents, in Portuguese, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). A photo-copy set can be purchased from the Branch for 15s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. United Kingdom firms are reminded that they cannot submit tenders direct but only through firms established in Mozambique whose names are registered with the Stores Department of the Treasury (Almoxarifado de Fazenda), Lourenço Marques. The Branch will, on request, supply the names of local concerns who have expressed their willingness to act on behalf of United Kingdom firms. The reference ESB 18396/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from Australia for electric barrier mechanisms for level crossings as follows:—

12 electric barrier mechanisms excluding barrier arm

36 barrier lamps complete with brackets

8 fresnel lenses—red (spares for barrier lamps)

2 circuit controller assemblies, complete

2 motors complete with holding coils

4 buffer springs.

The issuing authority is the Victorian Railways. The tender No. is 61,198. Bids should be sent to the secretary for Victorian Railways, Railways Administrative Offices, Spencer Street, Melbourne, Victoria. The closing date is August 14, 1957. A copy of the tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1.). A photo-copy set can be purchased from the Branch for 7s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. The reference ESB/17956/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for a large quantity of superheater elements and steel boiler flue tubes in two separate tenders. Full particulars can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.) quoting reference ESB/17615/57 for the superheater elements, and ESB/18071/57 for the flue tubes. The closing date in each case is August 21, 1957.

The Director-General of the India Store Department invites tenders for the supply of draft castings. See Official Notices on page 176.

The Special Register Information Service, Export Services Branch, Board of Trade has received a call from Portuguese East Africa, for high tension electrical materials for the electrical installations of Beira Railways.

The Issuing Authority is the Ports, Railways & Transport Department, Beira. The tender No. is A/CFB/1/-148/57. A provisional deposit of Esc. 50,000 must be made. The Closing Date is October 2, 1957. Specifications are obtainable from the Railway Warehouse at Lourenço Marques through local agents of United Kingdom firms interested. United Kingdom firms are reminded that they cannot submit tenders direct but only through firms established in Mozambique whose names are registered with the Stores Department of the Treasury (Almoxarifado de Fazenda), Lourenço Marques. The Branch will, on request, supply the names of local concerns who have expressed their willingness to act on behalf of United Kingdom firms. The reference ESB/18395/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from South Africa for railway track aligning telescopes as follows:—

50 track lining scopes as called for in specification CCE. 2/48-1957.

The Issuing Authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. G.2227: Track Lining Scopes" should be addressed to the Chief Stores Superintendent, South African Railways, P.O. Box 8617, Johannesburg. The closing date is August 20, 1957. A copy of the tender documents, including specification, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). A photo-copy set can be purchased from the Branch for 6s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. The reference ESB/18265/57 should be quoted in any correspondence with the Branch.

Notes and News

Overseas Railway Traffics.—In our editorial note last week "Overseas Railway Traffics" we inadvertently credited the East African Railways & Harbours earnings for June to the South African Railways & Harbours.

British Transport Docks Change of Address.—All communications should now be addressed to British Transport Docks, 163, Euston Road, London, N.W.1. The entrance for visitors is in Upper Woburn Place. The telephone number is Euston 4051, and the telegraphic address Dainwex, London, N.W.1.

Beyer, Peacock Offer for Anti-Attrition Metal.—Beyer, Peacock & Co. Ltd. announces that it has received acceptances of more than 50 per cent of the shares of the Anti-Attrition Metal Company and it has now declared its offer for the whole of the 4,000,000 2s. ordinary shares of that company to be unconditional.

London Midland Region Publicity in North Wales.—Mr. David Blee, General Manager of British Railways, London Midland Region, recently visited North Wales to see the efforts being made to interest holidaymakers in the many facilities for local day trips, including rail land cruises, visits to the Irish cross-Channel ships at Holyhead, and cheap excursions in North Wales. Among the places he visited were Rhyl, Denbigh, Abergele, Colwyn Bay, and Llandudno. At Abergele, he called on one of the families on holiday in a railway camping coach. During his tour Mr. Blee inspected the mobile enquiry bureau and booking office while it was at a camp site between Rhyl and Prestatyn. During the summer this bureau makes tours of the extensive camps and caravan centres on the North Wales coast, advising residents of tour facilities and making on-the-spot bookings. Last year the two men operating the bureau sold 4,500 tickets for local trips and answered 20,000 enquiries. In winter the bureau tours Sheffield, Liverpool, Manchester, and other industrial areas giving special advance information on North Wales holidays.

Collison on R.E.N.F.E.—Twenty-two deaths are reported and over 50 cases of serious injury as a result of a double-headed troop train running into a stationary locomotive at Villaverde, near Madrid, on August 4. All three locomotives were derailed, also most of the 12 coaches forming the troop train.

Road Casualties in June.—Road casualty figures for June show that 430 people were killed and 6,144 seriously injured. Deaths were 17 fewer than in June last year, but the seriously injured increased by 969. The probable reasons for the increase were the extra traffic which the fine weather brought out and the fact that June included the Whitsun holiday, which last year fell in May.

Trains Delayed by Hoax.—A ganger found on August 5, what was thought to be a bomb at a level crossing at Tempsford, near Biggleswade, Bedfordshire, on the East Coast main line of the Eastern Region. A number of trains were diverted. An Army bomb disposal squad was called from Bedford. Meanwhile, policemen looped wires round the object—two boxes wrapped in paper and connected with electric flex, in which a ticking sound could be heard—and pulled it apart while standing some distance away. Inside one box was a brick. The other held the works of an old alarm clock. Police were later trying to discover who had placed the object on the line. It was found at 9.40 a.m. and normal working was restored at 11.15 a.m.

Western Region Bank Holiday Traffic Arrangements.—The Western Region ran 224 additional long-distance expresses during the Bank Holiday weekend from August 2 to 6, augmenting the full service which normally operates at midsummer weekends. Services to the West of England, South and West Wales, and the Midlands were increased and many additional trains were provided on August Bank Holiday Monday to bring returning holidaymakers to London. Among the many excursions arranged was the "Holiday Express," daily from August 5 to 9 from Paddington, Ealing Broadway and Slough to a different destination each day. "Holiday Expresses," on similar lines were also arranged from other principal centres in the Region.

Heavy Railway Bank Holiday Traffic.—British Railways report a considerable increase in August Bank Holiday rail travel, Friday-Monday inclusive, as compared with last year. From the principal London termini alone, 674,000 passengers left in 2,083 long-distance trains, compared with 622,000 passengers in 2,064 trains during the corresponding four days last year. Excursion traffic was exceptionally good on Saturday, Sunday and Monday. The Southern Region Brighton trains carried 25,000 more passengers from London on Sunday and Monday than in the corresponding period last year. The London Midland Region reported increases of 48,000 and 79,700 passengers respectively to Blackpool and Southport.

Ransomes Forklift Trucks on Show.—Two recently developed battery-powered forklift trucks will be shown for the first time on the stand of Ransomes Sims & Jefferies Limited at the forthcoming Brewers' & Allied Traders' Exhibition to be held at Olympia, London, from September 30 to October 4. One of these, the NR 15, is similar to the design of the FL 10 but has an increased carrying capacity of 1,680 lb. at 15-in. load centre, compared with that for the FL 10 of 1,200 lb. The other is the NR 30 which is based on the FL 2000, but has almost twice the carrying capacity and a larger battery; the truck can carry 3,360 lb. at 20-in. load centres.

Aluminium Development Association Film.—A 16-mm. colour film "Lightweight Trains for Toronto" was presented for the first time before an invited audience at the offices of the Aluminium Development Association on August 1. It was produced in collaboration with the Gloucester Railway Carriage & Wagon Co. Ltd., and the Toronto Transit Commission, and follows the process of production of an aluminium car built by Gloucester for the Yonge Street Subway in Toronto through the works; it also shows the sand casting of the sliding doors in the foundry. The film is available for loan from the A.D.A., 33, Grosvenor Street, W.1, and has a running time of approximately 20 min.

Southern Region Rail/Rover Tickets.—A new Southern Region Sunday travel facility was instituted on August 4, and obtains every Sunday until October 27. The rail/rover ticket costs 10s. (children half-rate) and is issued for three different areas: Thames Riverside, Surrey Hills, and Kent & Surrey Countryside. The holder can travel as much as he likes and by any train during the Sunday within the area for which the ticket is available. The areas are as follows: Area 1 (Thames Riverside)—bounded by Victoria, Waterloo, Hounslow, Windsor & Eton Riverside, Virginia Water, Weybridge, Hampton Court, Shepperton; Area 2 (Surrey Hills)—bounded by Victoria, Charing Cross, Waterloo, Woking, Guildford, Dorking North, Deepdene, Redhill, Epsom Downs, Tattenham Corner; Area 3 (Kent & Surrey Countryside)—bounded by Victoria, Char-

Mr. David Blee with (left) Mr. F. H. Fisher, District Traffic Superintendent, Chester, and staff of the mobile enquiry bureau and booking office at a camp site between Rhyl and Prestatyn

ing Cross, Waterloo, Clapham Junction, Streatham, Tattenham Corner, Redhill, Caterham, Oxted, Hayes, Westerham, Lewisham, Hither Green, Swanley, Otford, Sevenoaks.

Extension of Diesel Services in Hull Area.—Additional diesel units were brought into use by the North Eastern Region in the Hull area on July 29, making possible an extension of the diesel services introduced in January. Altogether 16 steam operated passenger trains have been replaced by the additional diesel units. Diesel services now operate for the first time between Hull and York, Hull and Bridlington, Hull and Scarborough, and Bridlington and Selby. This extension is a major step towards the complete dieselisation of passenger services in the Hull area. With the introduction of the new time table on September 16, most of the remaining steam train services will be converted to diesel operation, and accelerated.

Improved Sheffield Twist Drill Turnover.—The annual meeting of the Sheffield Twist Drill & Steel Co. Ltd. was held in Sheffield on July 11. In his circulated statement, Mr. Alexander Dormer, Chairman & Managing Director, stated that the net profit of the group for the year ended December 31 last, before taxation, was £781,341, compared with £805,147 in the previous year. This reduction was not attributable to any falling off in turnover which, in fact, increased, but the decision not to amend prices following the increase in wages by the 1956 wage award meant that the consequent increase in cost of production was not passed on to customers. Export trade was a record and there was a significant increase in trade with dollar areas. The report and accounts were adopted.

Butterley Co. Ltd. Meeting.—The annual meeting of the Butterley Co. Ltd. was held at Ripley, near Derby, on July 5. In the course of his remarks, Mr. M. F. M. Wright, the Chairman, stated that the accounts of the company showed a less favourable position than for some time. The trading profit dropped from £399,912 to £328,886, a decrease of £71,026. Group profit before deducting taxation fell by £115,643. This reflected continued losses in the Civil Engineering Department, and some slight reduction in the profits of other departments. The Board was now in the process of disposing of assets not now required. The activities of the company would in future be confined mainly to the engineering business, development in the field of industrial gases, and brick works and building supplies. These three activities they believed to be sound and necessary in the expanding economy of the country.

Wickman Limited Results.—A tax-free dividend of 13 per cent on the £1,600,000 ordinary stock is recommended by the directors of Wickman Limited for the financial year ended March 31. This compares with the previous year's tax-free dividend of 17½ per cent which was on an ordinary stock total of £1,250,000. The group profit for this past year, after all charges including taxation, was £465,488 (£519,594), the amount of this profit attributable to members of the holding company, that is after the deduction of outside interests, being £414,928 (£463,592).

Formation of Railko Limited.—Birfield Industries Limited has announced the formation of Railko Limited, which has been created to acquire the Railko Engineering Bearings & Laminates Department of Small & Parkes Limited of Manchester. Laycock Engineering Limited, a member of the Birfield Group, has for the past eight years acted as general sales agents for Railko for railway applications. Arrangements for continuity of production, delivery, research and development, pending the erection of the new factory, have been made with Small & Parkes Limited.

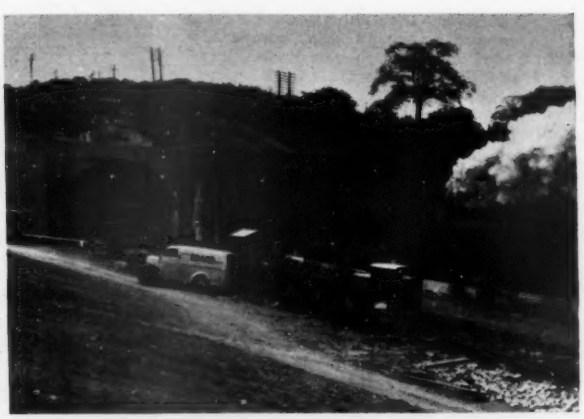
Acceleration of Export Traffic by Western Region.—Express freight services to provide overnight delivery of export goods at London Docks, which were introduced by British Railways from certain stations some time ago, will now operate from

New General Purpose Vessel for Clyde Services

The "Glen Sannox," the new general purpose vessel of the Caledonian Steam Packet Co. Ltd. (see our April 26 issue), now in service between Ardrossan (or Fairlie) and the island of Arran

Progress of New Potters Bar Tunnel

Conveyor removing spoil from south end of Potters Bar tunnel, Eastern Region



Spoil removal by light diesel railway at south end of tunnel under construction

additional stations in the Midlands. These are: West Bromwich, Oldbury, Langley Green, Rowley Regis, Wolverhampton Walsall Street, Halesowen, Leamington, Banbury, and Worcester. Traders in these areas consigning traffic to London Docks in full wagonloads will be assured of delivery the following morning.

Morgan Crucible Produces Aluminium Die-casting Furnaces.—The Morgan Crucible Co. Ltd. has developed two furnaces designed specially for aluminium die-casting operations. One of these, the Electric Die-casting Furnace, has been produced in association with Birlec Limited. This is an electrically heated crucible furnace of 300-lb. capacity for maintaining aluminium and aluminium alloys, and incorporates a fully automatic temperature control to maintain the metal at the desired casting temperature. The other unit is the Basin Tilting Furnace, which is complementary to the Die-casting Furnace, as it is an aluminium bulk melting furnace for feeding maintaining furnaces. A special feature is the built-in tilting mechanism.

Saunders Valve Co. Ltd. Sales Increase.—In his circulated statement on the year ended March 31 last, Mr. J. C. Billingham, Chairman, Saunders Valve Co. Ltd., states that total sales of the group increased by 11 per cent over those of the previous year, the figure for Saunders Diaphragm Valve sales, which amounted to 68 per cent of total sales, was an increase of 5 per cent. Export sales of Saunders Diaphragm Valves were at a higher level and now amount to 57 per cent of total valve sales. On the profit side the company has experienced a narrowing of margins. Now it is faced with a further substantial wage increase and resultant indirect increases. Although increasing turnover and the advantages of improved productivity, he remarks, have provided a welcome source from which increased costs could be absorbed this is not an eternal or indeed an inevitable process.

Railway Stock Market

Business in stock markets was moderate and the trend in the industrial sections again rather uncertain, because financial results have been coming to hand which show that rising costs are reducing profits. On the other hand, buyers continued to predominate in the gilt-edged market, which showed higher prices as compared with a week ago, though best levels have not been held. There was again no particular feature among foreign railway stocks, apart from Dorada, the non-assented stock to the offer having advanced afresh to 74.

Despite the yields of around 11 per cent shown on both stocks, Antofagasta ordinary and preference at 33½ and 44 were little changed on balance, though buyers have been rather more in evidence. San Paulo Railway 3s. units were again 4s. and Mexican Central "A" bearer debentures were 68½. Costa Rica ordinary stock has changed hands around 21 and the 6½ per cent first debentures marked 74. Chilean Northern debentures again changed hands around 40, Guayaquil & Quito assented bonds marked 82, and Brazil Railway bonds 6½.

There was a good deal of activity in Canadian Pacifics in common with many other dollar stocks, because they tended to attract buyers after the recent fall which reflected the trend of Wall Street. Nevertheless in general prices were below those of a week ago. Canadian Pacifics were $71, compared with $72½, and White Pass have receded further on balance from $23¼ to $22¾.

Few movements occurred among the shares of locomotive builders and engineers. Beyer Peacock 5s. shares were 10s. 9d., Charles Roberts 5s. shares 11s. 6d., compared with 11s. 9d., and Westinghouse Brake were dealt in around 37s. Wagon Repairs 5s. shares were 13s. xd and Gloucester Wagon 10s. shares 16s. After the sharp fall which followed the financial results, Hurst Nelson shares have made a small rally from 30s. to 30s. 9d. Elsewhere, North British Locomotive eased to 19s. 6d. compared with 20s. 7½d. a week ago. Birmingham Wagon were 20s. 7½d. and in general shares of locomotive builders and engineers have received only very moderate attention, though yields are attractive and in most cases there seem reasonable prospects of dividends being maintained. Looking ahead, it can apparently be expected that profits will show an upward trend as more work comes to hand from the railway modernisation and development plans.

Electrical equipment and kindred shares have remained under the influence of the set-back in profits recently reported by the General Electric Co. Ltd., due to rising costs, which more than offset the effect of increased business. It is also being sugested in the City that although, in the future, atomic developments will yield good profits, companies which have entered this new field cannot expect satisfactory profits from this in the early stages. Associated Electrical shares have eased slightly to 59s. 3d., awaiting the half-yearly statement, English Electric were 60s. 9d., and Ruston & Hornsby have held steady at around 33s. British Oxygen were 35s. 3d.

British Aluminium shares have eased to 62s. on news of the rights offer of 2,000,000 shares at 58s. This will bring in £5,500,000, but it is admitted that in view of the company's big expansion plans overseas, many more millions will be required in due course. It is expected the dividend will be maintained at 12 per cent on the capital as increased by the present issue. American interests in British Aluminium shares are estimated in the City to total about 20 per cent, but there is no question of control passing out of British hands. Although moderate in relation to British standards, the yield of under 4 per cent on British Aluminium shares is attractive to Americans. Yields on leading American aluminium shares are under 2 per cent.

Forthcoming Meetings

Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.

August 21 (*Wed.*) to August 31 (*Sat.*).—The "Model Engineer" Exhibition, at the New Horticultural Hall, Westminster, S.W.1. Open daily (except Sundays) from 11 a.m. to 9 p.m.

August 24 (*Sat.*).—Permanent Way Institution, Manchester & Liverpool Section, visit to English Electric Co. Ltd., Preston. Party limited to 30 members.

OFFICIAL NOTICES

EXPERT COST AND WORKS ACCOUNTANT required by Railway Engineering Works in Lancashire. Permanent position with exceptional prospects.—Apply Box 402, *The Railway Gazette*, Tothill Press Ltd., 33, Tothill Street, S.W.1.

MECHANICAL DRAUGHTSMEN

METROPOLITAN-VICKERS ELECTRICAL CO. LTD. require Mechanical Draughtsmen for the design of Electric and Diesel-Electric Locomotives. These pensionable positions are for Drawing Offices at Trafford Park and Stockton-on-Tees. Please write for application form, quoting reference "L.9" to: Personnel Manager, Metropolitan-Vickers Electrical Co. Ltd., Trafford Park, Manchester, 17.

LONDON TRANSPORT require ENGINEERING ASSISTANTS for Bridges & Structures Office. Applicants should be graduates or studying for A.M.I.C.E. or be senior structural draughtsmen with several years' experience of design work. Salary range £790—£880. Free travel, medical examination. Applications within 7 days to Recruitment and Training Officer (F/EV 647), London Transport, 55, Broadway, S.W.1.

LONDON TRANSPORT require CIVIL ENGINEER, preferably between ages 35 and 50, with wide experience both in design and carrying out of heavy engineering works (i.e., earthworks, drainage, bridging, retaining walls, heavy foundations, reinforced concrete and tunnelling); experience in general railway constructions advantageous. Candidates should be Chartered Civil Engineers, fully capable of organising and directing a section of the Drawing Office in preparation of schemes, estimates, design, contract drawings, bills of quantities and specifications, and should have kept themselves abreast of modern design techniques. Salary range: £1,210 to £1,420. Medical examination; free travel. Applications within 7 days to Recruitment and Training Officer (F/EV 646), London Transport, 55, Broadway, S.W.1.

LONDON TRANSPORT require a number of CIVIL ENGINEERS in connection with their New Works Programme; preferably with a University Degree or Graduate Membership of a recognised professional Institution. Applicants must have had experience in preparation of schemes, estimates, civil engineering design, contract drawings and documents and be capable of controlling staff and supervising works executed by contract. They must have had experience in some of the following types of civil engineering work—earthworks, drainage, bridging, retaining walls, heavy foundations, R.C. works, tunnelling, general railway construction. Salary range according to ability, qualifications and experience, from £790 to £1,155. Medical examination; free travel. Applications within 14 days to Recruitment and Training Officer (F/EV 648), London Transport, 55, Broadway, S.W.1.

TRAFFIC MANAGER required by GOVERNMENT OF BRITISH GUIANA Transport and Harbours Department for 1 tour of 3 years in first instance. Fixed salary equivalent to £1,600 a year, either (*a*) on pensionable terms or (*b*) on contract terms with gratuity at rate of 22½ per cent. of salary. Free passages. Liberal leave on full salary. Candidates should have sound knowledge of rates and fares, claims, the law of common carriage, commercial relations, management of traffic staff, and Trade Union relations. They should be able to organise and operate all passenger and goods traffic by rail, ferry steamer and road, and to train local staff.—Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M3/44082/RA.

REQUIRED for the Central Railway of Peru Ltd. ASSISTANT ELECTRICAL ENGINEER (DIESEL)—to have served an Electrical Engineering apprenticeship and be a graduate of the Institute of Electrical Engineers. Must have had practical railway experience in the maintenance and repair of diesel electrical locomotives. Must be physically fit to carry out inspection trips and work periods at altitudes of 15,000 ft. Age: 23-30 years. Salary offered: £1,300 per annum plus cost-of-living allowance of approximately 20 per cent.—Please apply in writing to: Peruvian Transport Purchasing Co. Ltd., Rex House, 38, King William Street, London, E.C.4.

THE Director General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of:—900 (105 lbs. each) DRAFT CASTINGS. Forms of tender may be obtained from the above address on or after the 9th August, 1957, at a fee of 10s., which is not returnable. If payment is made by cheque, it should please be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 19th August, 1957. Please quote reference No. 49/57DB/Rly. 2.